

Search history

Krishnan 10/786613

02/22/2006

=> d his full

(FILE 'HOME' ENTERED AT 11:58:08 ON 22 FEB 2006)

FILE 'REGISTRY' ENTERED AT 11:58:19 ON 22 FEB 2006

L1 STRUCTURE uploaded
L2 50 SEA SSS SAM L1
D STAT QUE L2
L3 1062 SEA SSS FUL L1
SAVE TEMP L3 KRI613STRB/A
L4 330 SEA ABB=ON PLU=ON L3 AND NC>1
L5 330 SEA ABB=ON PLU=ON L3 AND NC=2
L6 305 SEA ABB=ON PLU=ON L4 AND NA>0
L7 25 SEA ABB=ON PLU=ON L4 NOT L6
L8 STRUCTURE uploaded
L9 4 SEA SUB=L3 SSS SAM L8
D SCA
D STAT QUE L9
L10 79 SEA SUB=L3 SSS FUL L8
SAVE TEMP L10 KRI613STRA/A

FILE 'CAPLUS' ENTERED AT 12:08:56 ON 22 FEB 2006

L11 33 SEA ABB=ON PLU=ON L10

FILE 'REGISTRY' ENTERED AT 12:09:09 ON 22 FEB 2006

FILE 'STNGUIDE' ENTERED AT 12:09:47 ON 22 FEB 2006

FILE 'REGISTRY' ENTERED AT 12:11:05 ON 22 FEB 2006

L12 STRUCTURE uploaded
L13 11 SEA SUB=L3 SSS SAM L12
D STAT QUE L13
L14 226 SEA SUB=L3 SSS FUL L12
SAVE TEMP L14 KRI613STRC/A
L15 60 SEA ABB=ON PLU=ON L14 AND NC>1
L16 60 SEA ABB=ON PLU=ON L15 AND NA>0
L17 60 SEA ABB=ON PLU=ON L16 AND NC=2
L18 STRUCTURE uploaded
L19 4 SEA SUB=L3 SSS SAM L18
L20 79 SEA SUB=L3 SSS FUL L18
SAVE TEMP L20 KRI613STRD/A

FILE 'CAPLUS' ENTERED AT 12:36:19 ON 22 FEB 2006

L21 33 SEA ABB=ON PLU=ON L20
L22 9 SEA ABB=ON PLU=ON L2 (L) (THU OR DMA OR PAC OR PKT OR
BAC)/RL
D SCA TI L22
L23 25 SEA ABB=ON PLU=ON ACHARAN SULFATE/OBI
L24 2 SEA ABB=ON PLU=ON L21 AND L23

FILE 'REGISTRY' ENTERED AT 12:39:34 ON 22 FEB 2006

E ACHARAN/CN

L25 1 SEA ABB=ON PLU=ON ACHARAN SULFATE/CN
D SCA
L26 1 SEA ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/CN
D SCA

FILE 'CAPLUS' ENTERED AT 12:41:43 ON 22 FEB 2006

L27 24 SEA ABB=ON PLU=ON L25
L28 5 SEA ABB=ON PLU=ON L26

Krishnan 10/786613

02/22/2006

L29 2 SEA ABB=ON PLU=ON L21 AND L27
L30 0 SEA ABB=ON PLU=ON L21 AND L28
 E US2004-786613/APPS
L31 1 SEA ABB=ON PLU=ON US2004-786613/AP
 SEL RN

FILE 'REGISTRY' ENTERED AT 12:44:41 ON 22 FEB 2006
L32 1 SEA ABB=ON PLU=ON 192662-57-0/BI
 D SCA

FILE 'CAPLUS' ENTERED AT 12:45:30 ON 22 FEB 2006
 D IALL L31
 E CANCER+ALL/CT
 E E2

L33 28 SEA ABB=ON PLU=ON ACHARAN?/BI
L34 51 SEA ABB=ON PLU=ON ?ACHARAN?/BI
L35 23 SEA ABB=ON PLU=ON L34 NOT L33
 D SCA

FILE 'REGISTRY' ENTERED AT 12:52:37 ON 22 FEB 2006
 E ACHARAN/CN

FILE 'CAPLUS' ENTERED AT 12:53:13 ON 22 FEB 2006
L36 28 SEA ABB=ON PLU=ON L33 OR L27 OR L28 OR L23
 SAVE TEMP L36 KRI613ACHA/A

FILE 'REGISTRY' ENTERED AT 12:55:22 ON 22 FEB 2006
 SAVE TEMP L17 KRI613MONO/A

FILE 'CAPLUS' ENTERED AT 12:56:43 ON 22 FEB 2006
 SAVE TEMP L31 KRI613APP/A

FILE 'REGISTRY' ENTERED AT 12:57:46 ON 22 FEB 2006
 D SCA L32

L*** FILE 'CAPLUS' ENTERED AT 12:57:54 ON 22 FEB 2006
 DEL 24 S L32

FILE 'STNGUIDE' ENTERED AT 12:58:58 ON 22 FEB 2006
 D SAV

FILE 'STNGUIDE' ENTERED AT 12:59:48 ON 22 FEB 2006

FILE 'EMBASE' ENTERED AT 13:09:20 ON 22 FEB 2006
 E NEOPLASM+ALL/CT
 E ANGIOGENESIS INHIBITOR+ALL/CT
 E ANTITUMOR AGENT+ALL/CT
 E E2+ALL

FILE 'MEDLINE' ENTERED AT 13:12:51 ON 22 FEB 2006
 E ANTITUMOR AGENTS/CT
 E ANTITUMOR AGENTS+ALL/CT
 E E2=ALL
 E ANTITUMOR AGENTS+ALL/CT
 E E2+ALL
 E E1+ALL/CT

FILE 'STNGUIDE' ENTERED AT 13:13:44 ON 22 FEB 2006

FILE 'CAPLUS' ENTERED AT 13:14:00 ON 22 FEB 2006

E NEOPLASMS+ALL/CT

FILE 'STNGUIDE' ENTERED AT 13:16:47 ON 22 FEB 2006

FILE 'CAPLUS' ENTERED AT 13:17:00 ON 22 FEB 2006
E ANGIGENESIS INHIBITORS+ALL/CT
E ANGIOGENESIS INHIBITORS+ALL/CT
E E10+ALL

FILE 'STNGUIDE' ENTERED AT 13:18:24 ON 22 FEB 2006

FILE 'CAPLUS' ENTERED AT 14:33:01 ON 22 FEB 2006
L37 304372 SEA ABB=ON PLU=ON ?CANCER?/BI
L38 526763 SEA ABB=ON PLU=ON ?TUMOR?/BI
L39 3949 SEA ABB=ON PLU=ON ?TUMOUR?/BI
L40 49768 SEA ABB=ON PLU=ON ?SARCOMA?/BI
L41 444230 SEA ABB=ON PLU=ON ?NEOPLAS?/BI
L42 251331 SEA ABB=ON PLU=ON ?CARCINO?/BI
L43 34965 SEA ABB=ON PLU=ON ?ANGIOGEN?/BI
L44 7 SEA ABB=ON PLU=ON (L37 OR L38 OR L39 OR L40 OR L41 OR L42)
AND (L21 OR L22 OR L36)
L45 4 SEA ABB=ON PLU=ON L43 AND (L21 OR L22 OR L36)
L46 422 SEA ABB=ON PLU=ON LINHARDT R?/AU
L47 31492 SEA ABB=ON PLU=ON KIM Y?/AU
L48 35 SEA ABB=ON PLU=ON L46 AND L47
L49 13 SEA ABB=ON PLU=ON L48 AND (L21 OR L22 OR L36)

FILE 'REGISTRY' ENTERED AT 14:40:58 ON 22 FEB 2006

SET SMARTSELECT ON
L*** DEL SEL L20 1- CHEM : 80 TERMS
SET SMARTSELECT OFF

FILE 'CAPLUS' ENTERED AT 14:41:10 ON 22 FEB 2006

FILE 'REGISTRY' ENTERED AT 14:41:10 ON 22 FEB 2006
SET SMARTSELECT ON
L*** DEL SEL L25 1- CHEM : 2 TERMS
SET SMARTSELECT OFF

FILE 'CAPLUS' ENTERED AT 14:41:11 ON 22 FEB 2006

FILE 'REGISTRY' ENTERED AT 14:41:11 ON 22 FEB 2006
SET SMARTSELECT ON
L*** DEL SEL L26 1- CHEM : 2 TERMS
SET SMARTSELECT OFF

FILE 'CAPLUS' ENTERED AT 14:41:12 ON 22 FEB 2006

FILE 'MEDLINE' ENTERED AT 14:42:30 ON 22 FEB 2006
L50 18 SEA ABB=ON PLU=ON ACHARAN?
L51 0 SEA ABB=ON PLU=ON L20
L52 0 SEA ABB=ON PLU=ON L25
L53 0 SEA ABB=ON PLU=ON L26

FILE 'REGISTRY' ENTERED AT 14:43:49 ON 22 FEB 2006
SET SMARTSELECT ON
L54 SEL PLU=ON L20 1- CHEM : 80 TERMS
SET SMARTSELECT OFF

FILE 'MEDLINE' ENTERED AT 14:43:56 ON 22 FEB 2006

Krishnan 10/786613

02/22/2006

L55 0 SEA ABB=ON PLU=ON L54

FILE 'REGISTRY' ENTERED AT 14:44:15 ON 22 FEB 2006
SET SMARTSELECT ON
L56 SEL PLU=ON L25 1- CHEM : 2 TERMS
SET SMARTSELECT OFF

FILE 'MEDLINE' ENTERED AT 14:44:16 ON 22 FEB 2006
L57 18 SEA ABB=ON PLU=ON L56

FILE 'REGISTRY' ENTERED AT 14:44:25 ON 22 FEB 2006
SET SMARTSELECT ON
L58 SEL PLU=ON L26 1- CHEM : 2 TERMS
SET SMARTSELECT OFF

FILE 'MEDLINE' ENTERED AT 14:44:26 ON 22 FEB 2006
L59 4 SEA ABB=ON PLU=ON L58
L60 18 SEA ABB=ON PLU=ON L50 OR L57 OR L59
L61 579828 SEA ABB=ON PLU=ON ?CANCER?
L62 790107 SEA ABB=ON PLU=ON ?TUMOR?
L63 133927 SEA ABB=ON PLU=ON ?TUMOUR?
L64 125245 SEA ABB=ON PLU=ON ?SARCOMA?
L65 1548799 SEA ABB=ON PLU=ON ?NEOPLAS?
L66 575010 SEA ABB=ON PLU=ON ?CARCINO?
L67 1627678 SEA ABB=ON PLU=ON NEOPLASMS+NT/CT
L68 3636 SEA ABB=ON PLU=ON ANGIOGENESIS INHIBITORS/CT
L69 4 SEA ABB=ON PLU=ON L60 AND (L61 OR L62 OR L63 OR L64 OR L65
OR L66 OR L67 OR L68)
L70 14 SEA ABB=ON PLU=ON L60 NOT L69
D TRIAL 1-14
L71 30590 SEA ABB=ON PLU=ON ?ANGIOGEN?
L72 2 SEA ABB=ON PLU=ON L60 AND L71
D TRIAL 1-2
L73 283 SEA ABB=ON PLU=ON LINHARDT R?/AU
L74 10317 SEA ABB=ON PLU=ON KIM Y?/AU
L75 31 SEA ABB=ON PLU=ON L73 AND L74
L76 9 SEA ABB=ON PLU=ON L75 AND L60

FILE 'EMBASE' ENTERED AT 14:51:58 ON 22 FEB 2006
L77 16 SEA ABB=ON PLU=ON ACHARAN?
L78 0 SEA ABB=ON PLU=ON L20
L79 0 SEA ABB=ON PLU=ON L25
L80 0 SEA ABB=ON PLU=ON L26

FILE 'REGISTRY' ENTERED AT 14:52:47 ON 22 FEB 2006
SET SMARTSELECT ON
L81 SEL PLU=ON L20 1- CHEM : 80 TERMS
SET SMARTSELECT OFF

FILE 'EMBASE' ENTERED AT 14:52:49 ON 22 FEB 2006
L82 0 SEA ABB=ON PLU=ON L81

FILE 'REGISTRY' ENTERED AT 14:52:57 ON 22 FEB 2006
SET SMARTSELECT ON
L83 SEL PLU=ON L25 1- CHEM : 2 TERMS
SET SMARTSELECT OFF

FILE 'EMBASE' ENTERED AT 14:52:57 ON 22 FEB 2006
L84 16 SEA ABB=ON PLU=ON L83

FILE 'REGISTRY' ENTERED AT 14:53:04 ON 22 FEB 2006
 SET SMARTSELECT ON
 L85 SEL PLU=ON L26 1- CHEM : 2 TERMS
 SET SMARTSELECT OFF

FILE 'EMBASE' ENTERED AT 14:53:05 ON 22 FEB 2006
 L86 4 SEA ABB=ON PLU=ON L85
 L87 16 SEA ABB=ON PLU=ON L77 OR L84 OR L86
 L88 851781 SEA ABB=ON PLU=ON ?CANCER?
 L89 778474 SEA ABB=ON PLU=ON ?TUMOR? OR ?TUMOUR?
 L90 90530 SEA ABB=ON PLU=ON ?SARCOMA?
 L91 230147 SEA ABB=ON PLU=ON ?NEOPLAS?
 L92 517907 SEA ABB=ON PLU=ON ?CARCINO?
 L93 34532 SEA ABB=ON PLU=ON ?ANGIOGEN?
 L94 1349056 SEA ABB=ON PLU=ON NEOPLASM+NT/CT
 L95 4217 SEA ABB=ON PLU=ON ANGIOGENESIS INHIBITOR/CT
 L96 4 SEA ABB=ON PLU=ON L87 AND (L88 OR L89 OR L90 OR L91 OR L92
 OR L93 OR L94 OR L95)
 D TRIAL 1-4
 L97 261 SEA ABB=ON PLU=ON LINHARDT R?/AU
 L98 8968 SEA ABB=ON PLU=ON KIM Y?/AU
 L99 21 SEA ABB=ON PLU=ON L97 AND L98
 L100 7 SEA ABB=ON PLU=ON L99 AND (L96 OR L87)

FILE 'BIOSIS' ENTERED AT 14:57:42 ON 22 FEB 2006
 L101 22 SEA ABB=ON PLU=ON ACHARAN?
 L102 0 SEA ABB=ON PLU=ON L20
 L103 17 SEA ABB=ON PLU=ON L25
 L104 1 SEA ABB=ON PLU=ON L26

FILE 'REGISTRY' ENTERED AT 14:58:11 ON 22 FEB 2006
 SET SMARTSELECT ON
 L105 SEL PLU=ON L20 1- CHEM : 80 TERMS
 SET SMARTSELECT OFF

FILE 'BIOSIS' ENTERED AT 14:58:13 ON 22 FEB 2006
 L106 0 SEA ABB=ON PLU=ON L105

FILE 'REGISTRY' ENTERED AT 14:58:21 ON 22 FEB 2006
 SET SMARTSELECT ON
 L107 SEL PLU=ON L25 1- CHEM : 2 TERMS
 SET SMARTSELECT OFF

FILE 'BIOSIS' ENTERED AT 14:58:22 ON 22 FEB 2006
 L108 21 SEA ABB=ON PLU=ON L107

FILE 'REGISTRY' ENTERED AT 14:58:29 ON 22 FEB 2006
 SET SMARTSELECT ON
 L109 SEL PLU=ON L26 1- CHEM : 2 TERMS
 SET SMARTSELECT OFF

FILE 'BIOSIS' ENTERED AT 14:58:30 ON 22 FEB 2006
 L110 4 SEA ABB=ON PLU=ON L109
 L111 22 SEA ABB=ON PLU=ON L101 OR L103 OR L104 OR L108 OR L110
 L112 546518 SEA ABB=ON PLU=ON ?CANCER?
 L113 976062 SEA ABB=ON PLU=ON ?TUMOR? OR ?TUMOUR?
 L114 95426 SEA ABB=ON PLU=ON ?SARCOMA?
 L115 759144 SEA ABB=ON PLU=ON ?NEOPLAS?
 L116 507193 SEA ABB=ON PLU=ON ?CARCINO?
 L117 35893 SEA ABB=ON PLU=ON ?ANGIOGEN?

Krishnan 10/786613

02/22/2006

E NEOPLASM+ALL/CT
E E3+ALL
L118 4 SEA ABB=ON PLU=ON L111 AND (L112 OR L113 OR L114 OR L115 OR
L116 OR L117)
L119 18 SEA ABB=ON PLU=ON L111 NOT L118
L120 359 SEA ABB=ON PLU=ON LINHARDT R?/AU
L121 15625 SEA ABB=ON PLU=ON KIM Y?/AU
L122 40 SEA ABB=ON PLU=ON L120 AND L121
L123 11 SEA ABB=ON PLU=ON L122 AND (L111 OR L118)

FILE 'USPATFULL' ENTERED AT 15:05:15 ON 22 FEB 2006
L124 1 SEA ABB=ON PLU=ON L20
L125 2 SEA ABB=ON PLU=ON L25
L126 1 SEA ABB=ON PLU=ON L26

FILE 'REGISTRY' ENTERED AT 15:06:18 ON 22 FEB 2006
SET SMARTSELECT ON
L127 SEL PLU=ON L20 1- CHEM : 80 TERMS
SET SMARTSELECT OFF

FILE 'USPATFULL' ENTERED AT 15:06:20 ON 22 FEB 2006
L128 0 SEA ABB=ON PLU=ON L127

FILE 'REGISTRY' ENTERED AT 15:06:30 ON 22 FEB 2006
SET SMARTSELECT ON
L129 SEL PLU=ON L25 1- CHEM : 2 TERMS
SET SMARTSELECT OFF

FILE 'USPATFULL' ENTERED AT 15:06:30 ON 22 FEB 2006
L130 4 SEA ABB=ON PLU=ON L129

FILE 'REGISTRY' ENTERED AT 15:06:36 ON 22 FEB 2006
SET SMARTSELECT ON
L131 SEL PLU=ON L26 1- CHEM : 2 TERMS
SET SMARTSELECT OFF

FILE 'USPATFULL' ENTERED AT 15:06:36 ON 22 FEB 2006
L132 1 SEA ABB=ON PLU=ON L131
L133 4 SEA ABB=ON PLU=ON ACHARAN?
L134 5 SEA ABB=ON PLU=ON L124 OR L125 OR L126 OR L130 OR L132 OR
L133
L135 120107 SEA ABB=ON PLU=ON ?CANCER?
L136 104777 SEA ABB=ON PLU=ON ?TUMOR?
L137 12054 SEA ABB=ON PLU=ON ?TUMOUR?
L138 34800 SEA ABB=ON PLU=ON ?SARCOMA?
L139 37564 SEA ABB=ON PLU=ON ?NEOPLAS?
L140 67199 SEA ABB=ON PLU=ON ?CARCINO?
L141 22227 SEA ABB=ON PLU=ON ?ANGIOGEN?
L142 4 SEA ABB=ON PLU=ON L134 AND (L135 OR L136 OR L137 OR L138 OR
L139 OR L140 OR L141)
L143 1 SEA ABB=ON PLU=ON L134 NOT L142
D SCA
L144 28 SEA ABB=ON PLU=ON LINHARDT R?/AU
L145 4380 SEA ABB=ON PLU=ON KIM Y?/AU
L146 2 SEA ABB=ON PLU=ON L144 AND L145
L147 2 SEA ABB=ON PLU=ON L146 AND L142

FILE 'STNGUIDE' ENTERED AT 15:11:50 ON 22 FEB 2006

FILE 'REGISTRY' ENTERED AT 15:13:00 ON 22 FEB 2006

L*** DEL 0 S L20 AND RELATED POLYMERS/FA
L*** DEL 0 S L***
L148 79 POLYLINK L20
L149 0 SEA ABB=ON PLU=ON L148 NOT L20

FILE 'STNGUIDE' ENTERED AT 15:14:33 ON 22 FEB 2006

FILE 'REGISTRY' ENTERED AT 15:14:46 ON 22 FEB 2006
D STAT QUE L17
D STAT QUE L20
D QUE NOS L149

FILE 'STNGUIDE' ENTERED AT 15:15:59 ON 22 FEB 2006

FILE 'WPIX' ENTERED AT 15:20:01 ON 22 FEB 2006
L150 0 SEA SSS SAM L18
L151 1 SEA SSS FUL L18

FILE 'STNGUIDE' ENTERED AT 15:20:34 ON 22 FEB 2006

FILE 'WPIX' ENTERED AT 15:22:23 ON 22 FEB 2006
L152 1 SEA ABB=ON PLU=ON L151/DCR
L153 28 SEA ABB=ON PLU=ON LINHARDT R?/AU
L154 28293 SEA ABB=ON PLU=ON KIM Y?/AU
L155 2 SEA ABB=ON PLU=ON L153 AND L154
L156 5 SEA ABB=ON PLU=ON ACHARAN?
L157 119623 SEA ABB=ON PLU=ON (L135 OR L136 OR L137 OR L138 OR L139 OR
L140 OR L141)
L158 0 SEA ABB=ON PLU=ON L152 AND L157
L159 3 SEA ABB=ON PLU=ON L156 AND L157
L160 2 SEA ABB=ON PLU=ON L155 AND (L152 OR L156)

FILE 'STNGUIDE' ENTERED AT 15:25:47 ON 22 FEB 2006

FILE 'CAPLUS' ENTERED AT 15:30:55 ON 22 FEB 2006
D QUE NOS L48
D QUE NOS L49
L161 35 SEA ABB=ON PLU=ON (L48 OR L49)

FILE 'MEDLINE' ENTERED AT 15:30:58 ON 22 FEB 2006
D QUE NOS L75
D QUE NOS L76
L162 31 SEA ABB=ON PLU=ON (L75 OR L76)

FILE 'EMBASE' ENTERED AT 15:31:01 ON 22 FEB 2006
D QUE NOS L99
D QUE NOS L100
L163 21 SEA ABB=ON PLU=ON (L99 OR L100)

FILE 'BIOSIS' ENTERED AT 15:31:04 ON 22 FEB 2006
D QUE NOS L122
D QUE NOS L123
L164 40 SEA ABB=ON PLU=ON (L122 OR L123)

FILE 'WPIX' ENTERED AT 15:31:07 ON 22 FEB 2006
D QUE NOS L155
D QUE NOS L160
L165 2 SEA ABB=ON PLU=ON L155 OR L160

FILE 'USPATFULL' ENTERED AT 15:31:11 ON 22 FEB 2006

Krishnan 10/786613

02/22/2006

L166 D QUE NOS L146
 D QUE NOS L147
 2 SEA ABB=ON PLU=ON L146 OR L147

FILE 'STNGUIDE' ENTERED AT 15:31:22 ON 22 FEB 2006

FILE 'CAPLUS, MEDLINE, EMBASE, BIOSIS, WPIX, USPATFULL' ENTERED AT
15:32:34 ON 22 FEB 2006

L167 47 DUP REM L161 L162 L163 L164 L165 L166 (84 DUPLICATES REMOVED)
 ANSWERS '1-35' FROM FILE CAPLUS
 ANSWERS '36-37' FROM FILE MEDLINE
 ANSWERS '38-46' FROM FILE BIOSIS
 ANSWER '47' FROM FILE USPATFULL
 D IBIB ABS HITIND HITSTR L167 1-35
 D IALL L167 36-46
 D IBIB ABS KWIC HITSTR L167 47

FILE 'STNGUIDE' ENTERED AT 15:34:54 ON 22 FEB 2006

FILE 'CAPLUS' ENTERED AT 15:40:05 ON 22 FEB 2006

L168 D QUE NOS L44
 D QUE NOS L45
 4 SEA ABB=ON PLU=ON ((L44 OR L45)) NOT L161

FILE 'MEDLINE' ENTERED AT 15:40:08 ON 22 FEB 2006

L169 D QUE NOS L51
 D QUE NOS L52
 D QUE NOS L53
 D QUE NOS L55
 D QUE NOS L69
 D QUE NOS L72
 3 SEA ABB=ON PLU=ON ((L51 OR L52 OR L53) OR L55 OR L69 OR L72)
 NOT L162

FILE 'EMBASE' ENTERED AT 15:40:14 ON 22 FEB 2006

L170 D QUE NOS L78
 D QUE NOS L79
 D QUE NOS L80
 D QUE NOS L82
 D QUE NOS L96
 2 SEA ABB=ON PLU=ON (L78 OR L79 OR L80 OR L82 OR L96) NOT L163

FILE 'BIOSIS' ENTERED AT 15:40:19 ON 22 FEB 2006

L171 D QUE NOS L102
 D QUE NOS L106
 D QUE NOS L118
 2 SEA ABB=ON PLU=ON (L102 OR L106 OR L118) NOT L164

FILE 'WPIX' ENTERED AT 15:40:23 ON 22 FEB 2006

L172 D QUE NOS L159
 D QUE NOS L152
 D QUE NOS L158
 2 SEA ABB=ON PLU=ON (L159 OR L152 OR L158) NOT L165

FILE 'USPATFULL' ENTERED AT 15:40:28 ON 22 FEB 2006

L173 D QUE NOS L128
 D QUE NOS L142
 2 SEA ABB=ON PLU=ON (L128 OR L142) NOT L166

FILE 'STNGUIDE' ENTERED AT 15:40:45 ON 22 FEB 2006

FILE 'CAPLUS, MEDLINE, EMBASE, BIOSIS, WPIX, USPATFULL' ENTERED AT
15:42:45 ON 22 FEB 2006

L174 8 DUP REM L168 L169 L170 L171 L172 L173 (7 DUPLICATES REMOVED)
ANSWERS '1-4' FROM FILE CAPLUS
ANSWER '5' FROM FILE MEDLINE
ANSWER '6' FROM FILE WPIX
ANSWERS '7-8' FROM FILE USPATFULL
D IBIB ABS HITIND HITSTR L174 1-4
D IALL L174 5
D IBIB ABS HITSTR L174 6
D IBIB ABS KWIC HITSTR L174 7-8

FILE HOME

FILE REGISTRY

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 20 FEB 2006 HIGHEST RN 874742-76-4

DICTIONARY FILE UPDATES: 20 FEB 2006 HIGHEST RN 874742-76-4

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 6, 2006

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
*

Structure search iteration limits have been increased. See HELP SLIMITS
for details.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document. For information
on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

FILE CAPLUS

Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
American Chemical Society and is provided to assist you in searching
databases on STN. Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is

Krishnan 10/786613

02/22/2006

strictly prohibited.

FILE COVERS 1907 - 22 Feb 2006 VOL 144 ISS 9
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)

Effective October 17, 2005, revised CAS Information Use Policies apply.
They are available for your review at:

<http://www.cas.org/infopolicy.html>

FILE STNGUIDE
FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Feb 17, 2006 (20060217/UP).

FILE EMBASE
FILE COVERS 1974 TO 20 Feb 2006 (20060220/ED)

EMBASE has been reloaded. Enter HELP RLOAD for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

FILE MEDLINE
FILE LAST UPDATED: 21 FEB 2006 (20060221/UP). FILE COVERS 1950 TO DATE.

On December 11, 2005, the 2006 MeSH terms were loaded.

The MEDLINE reload for 2006 will soon be available. For details on the 2005 reload, enter HELP RLOAD at an arrow prompt (=>). See also:

<http://www.nlm.nih.gov/mesh/>
http://www.nlm.nih.gov/pubs/techbull/nd04/nd04_mesh.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_med_data_changes.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_2006_MeSH.html

OLDMEDLINE is covered back to 1950.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2006 vocabulary.

This file contains CAS Registry Numbers for easy and accurate

FILE BIOSIS
FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 15 February 2006 (20060215/ED)

FILE USPATFULL
FILE COVERS 1971 TO PATENT PUBLICATION DATE: 21 Feb 2006 (20060221/PD)
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)
HIGHEST GRANTED PATENT NUMBER: US7003800
HIGHEST APPLICATION PUBLICATION NUMBER: US2006037120
CA INDEXING IS CURRENT THROUGH 21 Feb 2006 (20060221/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 21 Feb 2006 (20060221/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Dec 2005
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Dec 2005

FILE WPIX
FILE LAST UPDATED: 17 FEB 2006 <20060217/UP>
MOST RECENT DERWENT UPDATE: 200612 <200612/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
PLEASE VISIT:
[<<](http://www.stn-international.de/training_center/patents/stn_guide.pdf)

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
<http://scientific.thomson.com/support/patents/coverage/latestupdates/>

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
GUIDES, PLEASE VISIT:
<http://scientific.thomson.com/support/products/dwpi/>

>>> FAST-ALERTING ACCESS TO NEWLY-PUBLISHED PATENT
DOCUMENTATION NOW AVAILABLE IN DERWENT WORLD PATENTS INDEX
FIRST VIEW - FILE WPIFV.
FOR FURTHER DETAILS:
<http://scientific.thomson.com/support/products/dwpifv/>

>>> THE CPI AND EPI MANUAL CODES WILL BE REVISED FROM UPDATE 200601.
PLEASE CHECK:
<http://scientific.thomson.com/support/patents/dwpiref/reftools/classificat>

>>> PLEASE BE AWARE OF THE NEW IPC REFORM IN 2006, SEE
http://www.stn-international.de/stndatabases/details/ipc_reform.html and
[<<](http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf)

>=

THIS PAGE IS BLANK

=> file registry
FILE 'REGISTRY' ENTERED AT 15:14:46 ON 22 FEB 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 21 FEB 2006 HIGHEST RN 874882-62-9
DICTIONARY FILE UPDATES: 21 FEB 2006 HIGHEST RN 874882-62-9

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 6, 2006

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

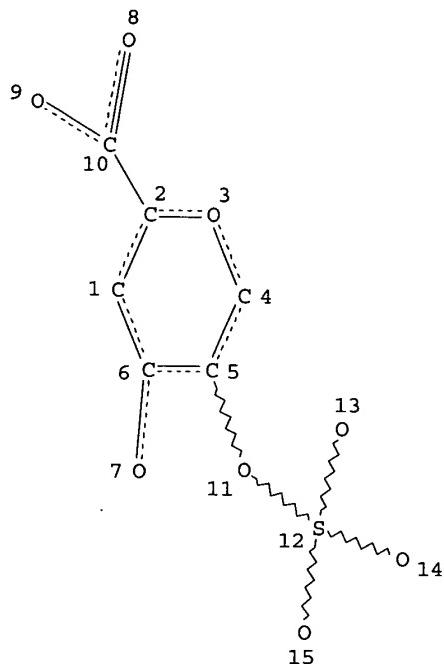
*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
*

Structure search iteration limits have been increased. See HELP SLIMITS
for details.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document. For information
on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

=> d stat que L17
L1 STR



NODE ATTRIBUTES:

```

NSPEC IS R AT 1
NSPEC IS R AT 2
NSPEC IS R AT 3
NSPEC IS R AT 4
NSPEC IS R AT 5
NSPEC IS R AT 6
NSPEC IS C AT 7
NSPEC IS C AT 8
NSPEC IS C AT 9
NSPEC IS C AT 10
NSPEC IS C AT 11
NSPEC IS C AT 12
NSPEC IS C AT 13
NSPEC IS C AT 14
NSPEC IS C AT 15
CONNECT IS E3 RC AT 10
DEFAULT MLEVEL IS ATOM
MLEVEL IS CLASS AT 7 8 9 10 11 12 13 14 15
DEFAULT ECLEVEL IS LIMITED

```

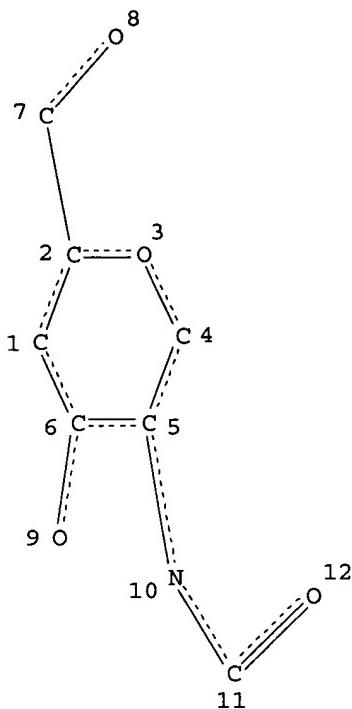
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L3 1062 SEA FILE=REGISTRY SSS FUL L1
L12 STR

a registry #s that contain the Sulfur-containing 1/2 of the repeating unit.



NODE ATTRIBUTES:

NSPEC	IS R	AT	1
NSPEC	IS R	AT	2
NSPEC	IS R	AT	3
NSPEC	IS R	AT	4
NSPEC	IS R	AT	5
NSPEC	IS R	AT	6
NSPEC	IS C	AT	7
NSPEC	IS C	AT	8
NSPEC	IS C	AT	9
NSPEC	IS C	AT	10
NSPEC	IS C	AT	11
NSPEC	IS C	AT	12

DEFAULT MLEVEL IS ATOM

MLEVEL IS CLASS AT 7 8 9 10 11 12

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

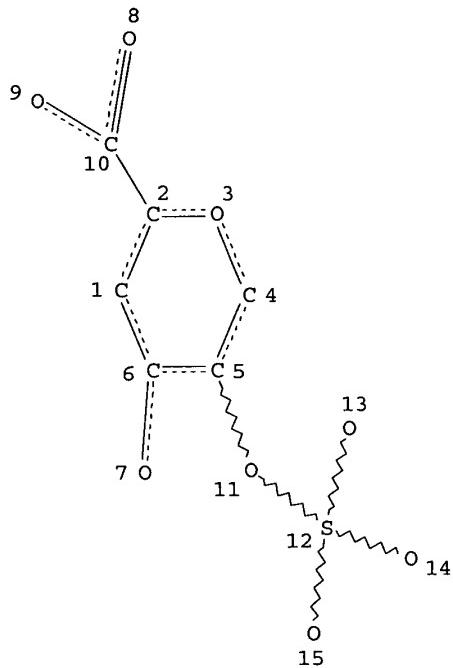
NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L14	226 SEA FILE=REGISTRY SUB=L3 SSS FUL L12
L15	60 SEA FILE=REGISTRY ABB=ON PLU=ON L14 AND NC>1
L16	60 SEA FILE=REGISTRY ABB=ON PLU=ON L15 AND NA>0
L17	60 SEA FILE=REGISTRY ABB=ON PLU=ON L16 AND NC=2

=> d stat que L20
 L1 STR

registry numbers that contain both ~~#~~ halves of the containing unit query logic shows that all entries that contain 2 components contain sodium not 2 monomer units.



NODE ATTRIBUTES:

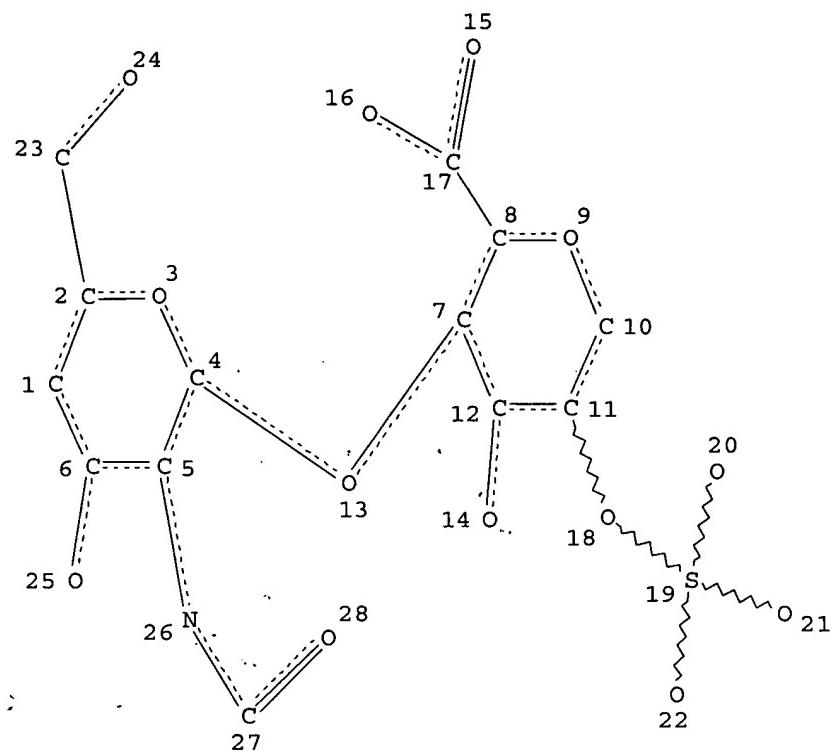
NSPEC IS R AT 1
 NSPEC IS R AT 2
 NSPEC IS R AT 3
 NSPEC IS R AT 4
 NSPEC IS R AT 5
 NSPEC IS R AT 6
 NSPEC IS C AT 7
 NSPEC IS C AT 8
 NSPEC IS C AT 9
 NSPEC IS C AT 10
 NSPEC IS C AT 11
 NSPEC IS C AT 12
 NSPEC IS C AT 13
 NSPEC IS C AT 14
 NSPEC IS C AT 15
 CONNECT IS E3 RC AT 10
 DEFAULT MLEVEL IS ATOM
 MLEVEL IS CLASS AT 7 8 9 10 11 12 13 14 15
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L3 1062 SEA FILE=REGISTRY SSS FUL L1
 L18 STR



NODE ATTRIBUTES:

NSPEC	IS R	AT	1
NSPEC	IS R	AT	2
NSPEC	IS R	AT	3
NSPEC	IS R	AT	4
NSPEC	IS R	AT	5
NSPEC	IS R	AT	6
NSPEC	IS R	AT	7
NSPEC	IS R	AT	8
NSPEC	IS R	AT	9
NSPEC	IS R	AT	10
NSPEC	IS R	AT	11
NSPEC	IS R	AT	12
NSPEC	IS C	AT	13
NSPEC	IS C	AT	14
NSPEC	IS C	AT	15
NSPEC	IS C	AT	16
NSPEC	IS C	AT	17
NSPEC	IS C	AT	18
NSPEC	IS C	AT	19
NSPEC	IS C	AT	20
NSPEC	IS C	AT	21
NSPEC	IS C	AT	22
NSPEC	IS C	AT	23
NSPEC	IS C	AT	24
NSPEC	IS C	AT	25
NSPEC	IS C	AT	26
NSPEC	IS C	AT	27
NSPEC	IS C	AT	28
CONNECT	IS E3	RC AT	17

Krishnan 10/786613

02/22/2006

DEFAULT MLEVEL IS ATOM
MLEVEL IS CLASS AT 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 28

STEREO ATTRIBUTES: NONE
L20 79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18

100.0% PROCESSED 199 ITERATIONS 79 ANSWERS
SEARCH TIME: 00.00.01

=> d que nos L149
L1 STR
L3 1062 SEA FILE=REGISTRY SSS FUL L1
L18 STR
L20 79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18 ←
L148 79 SEA FILE=REGISTRY POLYLINK L20
L149 0 SEA FILE=REGISTRY ABB=ON PLU=ON L148 NOT L20 ←

79 registry numbers have
the 2 monomers
attached to each other

=> => file caplus
FILE 'CAPLUS' ENTERED AT 15:30:55 ON 22 FEB 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

query logic
shows
that L20 = L148

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 22 Feb 2006 VOL 144 ISS 9
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)

Effective October 17, 2005, revised CAS Information Use Policies apply.
They are available for your review at:

<http://www.cas.org/infopolicy.html>
'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE

=> d que nos L48

L46 422 SEA FILE=CAPLUS ABB=ON PLU=ON LINHARDT R?/AU
L47 31492 SEA FILE=CAPLUS ABB=ON PLU=ON KIM Y?/AU
L48 35 SEA FILE=CAPLUS ABB=ON PLU=ON L46 AND L47

AUTHOR
SEARCH
(structure hits ~~will~~ for RNS
will show if present)

=> d que nos L49

```

L1          STR
L2      50 SEA FILE=REGISTRY SSS SAM L1
L3      1062 SEA FILE=REGISTRY SSS FUL L1
L18         STR
L20      79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L21      33 SEA FILE=CAPLUS ABB=ON   PLU=ON   L20
L22      9 SEA FILE=CAPLUS ABB=ON   PLU=ON   L2 (L) (THU OR DMA OR PAC OR
PKT OR BAC)/RL
L23     25 SEA FILE=CAPLUS ABB=ON   PLU=ON   ACHARAN SULFATE/OBI
L25     1 SEA FILE=REGISTRY ABB=ON   PLU=ON   ACHARAN SULFATE/CN
L26     1 SEA FILE=REGISTRY ABB=ON   PLU=ON   ACHARAN, N-DEACETYL-N-SULFO?/
CN
L27     24 SEA FILE=CAPLUS ABB=ON   PLU=ON   L25
L28      5 SEA FILE=CAPLUS ABB=ON   PLU=ON   L26
L33     28 SEA FILE=CAPLUS ABB=ON   PLU=ON   ACHARAN?/BI
L36     28 SEA FILE=CAPLUS ABB=ON   PLU=ON   L33 OR L27 OR L28 OR L23
L46     422 SEA FILE=CAPLUS ABB=ON   PLU=ON   LINHARDT R?/AU
L47    31492 SEA FILE=CAPLUS ABB=ON   PLU=ON   KIM Y?/AU
L48     35 SEA FILE=CAPLUS ABB=ON   PLU=ON   L46 AND L47
L49     13 SEA FILE=CAPLUS ABB=ON   PLU=ON   L48 AND (L21 OR L22 OR L36)

```

=> s L48-L49

L161 35 (L48 OR L49)

=> file medline

FILE 'MEDLINE' ENTERED AT 15:30:58 ON 22 FEB 2006

FILE LAST UPDATED: 21 FEB 2006 (20060221/UP). FILE COVERS 1950 TO DATE.

On December 11, 2005, the 2006 MeSH terms were loaded.

The MEDLINE reload for 2006 will soon be available. For details on the 2005 reload, enter HELP RLOAD at an arrow prompt (>). See also:

```

http://www.nlm.nih.gov/mesh/
http://www.nlm.nih.gov/pubs/techbull/nd04/nd04_mesh.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_med_data_changes.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_2006_MeSH.html

```

OLDMEDLINE is covered back to 1950.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2006 vocabulary.

This file contains CAS Registry Numbers for easy and accurate

=> d que nos L75

```

L73      283 SEA FILE=MEDLINE ABB=ON   PLU=ON   LINHARDT R?/AU
L74      10317 SEA FILE=MEDLINE ABB=ON   PLU=ON   KIM Y?/AU
L75      31 SEA FILE=MEDLINE ABB=ON   PLU=ON   L73 AND L74

```

=> d que nos L76

L25 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN

Krishnan 10/786613

02/22/2006

L26 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
CN
L50 18 SEA FILE=MEDLINE ABB=ON PLU=ON ACHARAN?
SEL PLU=ON L25 1- CHEM : 2 TERMS
L56 18 SEA FILE=MEDLINE ABB=ON PLU=ON L56
SEL PLU=ON L26 1- CHEM : 2 TERMS
L58 4 SEA FILE=MEDLINE ABB=ON PLU=ON L58
L59 18 SEA FILE=MEDLINE ABB=ON PLU=ON L50 OR L57 OR L59
L60 283 SEA FILE=MEDLINE ABB=ON PLU=ON LINHARDT R?/AU
L73 10317 SEA FILE=MEDLINE ABB=ON PLU=ON KIM Y?/AU
L74 31 SEA FILE=MEDLINE ABB=ON PLU=ON L73 AND L74
L75 9 SEA FILE=MEDLINE ABB=ON PLU=ON L75 AND L60

=> s L75-L76

L162 31 (L75 OR L76)

=> file embase

FILE 'EMBASE' ENTERED AT 15:31:01 ON 22 FEB 2006
Copyright (c) 2006 Elsevier B.V. All rights reserved.

FILE COVERS 1974 TO 20 Feb 2006 (20060220/ED)

EMBASE has been reloaded. Enter HELP RLOAD for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d que nos L99

L97 261 SEA FILE=EMBASE ABB=ON PLU=ON LINHARDT R?/AU
L98 8968 SEA FILE=EMBASE ABB=ON PLU=ON KIM Y?/AU
L99 21 SEA FILE=EMBASE ABB=ON PLU=ON L97 AND L98

=> d que nos L100

L25 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
L26 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
CN
L77 16 SEA FILE=EMBASE ABB=ON PLU=ON ACHARAN?
SEL PLU=ON L25 1- CHEM : 2 TERMS
L83 16 SEA FILE=EMBASE ABB=ON PLU=ON L83
L84 SEL PLU=ON L26 1- CHEM : 2 TERMS
L85 4 SEA FILE=EMBASE ABB=ON PLU=ON L85
L87 16 SEA FILE=EMBASE ABB=ON PLU=ON L77 OR L84 OR L86
L88 851781 SEA FILE=EMBASE ABB=ON PLU=ON ?CANCER?
L89 778474 SEA FILE=EMBASE ABB=ON PLU=ON ?TUMOR? OR ?TUMOUR?
L90 90530 SEA FILE=EMBASE ABB=ON PLU=ON ?SARCOMA?
L91 230147 SEA FILE=EMBASE ABB=ON PLU=ON ?NEOPLAS?
L92 517907 SEA FILE=EMBASE ABB=ON PLU=ON ?CARCINO?
L93 34532 SEA FILE=EMBASE ABB=ON PLU=ON ?ANGIOGEN?
L94 1349056 SEA FILE=EMBASE ABB=ON PLU=ON NEOPLASM+NT/CT
L95 4217 SEA FILE=EMBASE ABB=ON PLU=ON ANGIOGENESIS INHIBITOR/CT
L96 4 SEA FILE=EMBASE ABB=ON PLU=ON L87 AND (L88 OR L89 OR L90 OR
L91 OR L92 OR L93 OR L94 OR L95)
L97 261 SEA FILE=EMBASE ABB=ON PLU=ON LINHARDT R?/AU
L98 8968 SEA FILE=EMBASE ABB=ON PLU=ON KIM Y?/AU

L99 21 SEA FILE=EMBASE ABB=ON PLU=ON L97 AND L98
 L100 7 SEA FILE=EMBASE ABB=ON PLU=ON L99 AND (L96 OR L87)

=> s L99-L100

L163 21 (L99 OR L100)

=> file biosis

FILE 'BIOSIS' ENTERED AT 15:31:04 ON 22 FEB 2006
 Copyright (c) 2006 The Thomson Corporation

FILE COVERS 1969 TO DATE.
 CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
 FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 15 February 2006 (20060215/ED)

=> d que nos L122

L120 359 SEA FILE=BIOSIS ABB=ON PLU=ON LINHARDT R?/AU
 L121 15625 SEA FILE=BIOSIS ABB=ON PLU=ON KIM Y?/AU
 L122 40 SEA FILE=BIOSIS ABB=ON PLU=ON L120 AND L121

=> d que nos L123

L25 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
 L26 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
 CN
 L101 22 SEA FILE=BIOSIS ABB=ON PLU=ON ACHARAN?
 L103 17 SEA FILE=BIOSIS ABB=ON PLU=ON L25
 L104 1 SEA FILE=BIOSIS ABB=ON PLU=ON L26
 L107 SEL PLU=ON L25 1- CHEM : 2 TERMS
 L108 21 SEA FILE=BIOSIS ABB=ON PLU=ON L107
 L109 SEL PLU=ON L26 1- CHEM : 2 TERMS
 L110 4 SEA FILE=BIOSIS ABB=ON PLU=ON L109
 L111 22 SEA FILE=BIOSIS ABB=ON PLU=ON L101 OR L103 OR L104 OR L108
 OR L110
 L112 546518 SEA FILE=BIOSIS ABB=ON PLU=ON ?CANCER?
 L113 976062 SEA FILE=BIOSIS ABB=ON PLU=ON ?TUMOR? OR ?TUMOUR?
 L114 95426 SEA FILE=BIOSIS ABB=ON PLU=ON ?SARCOMA?
 L115 759144 SEA FILE=BIOSIS ABB=ON PLU=ON ?NEOPLAS?
 L116 507193 SEA FILE=BIOSIS ABB=ON PLU=ON ?CARCINO?
 L117 35893 SEA FILE=BIOSIS ABB=ON PLU=ON ?ANGIOGEN?
 L118 4 SEA FILE=BIOSIS ABB=ON PLU=ON L111 AND (L112 OR L113 OR L114
 OR L115 OR L116 OR L117)
 L120 359 SEA FILE=BIOSIS ABB=ON PLU=ON LINHARDT R?/AU
 L121 15625 SEA FILE=BIOSIS ABB=ON PLU=ON KIM Y?/AU
 L122 40 SEA FILE=BIOSIS ABB=ON PLU=ON L120 AND L121
 L123 11 SEA FILE=BIOSIS ABB=ON PLU=ON L122 AND (L111 OR L118)

=> s L122-L123

L164 40 (L122 OR L123)

=> file wpix

Krishnan 10/786613

02/22/2006

FILE 'WPIX' ENTERED AT 15:31:07 ON 22 FEB 2006
COPYRIGHT (C) 2006 THE THOMSON CORPORATION

FILE LAST UPDATED: 17 FEB 2006 <20060217/UP>
MOST RECENT DERWENT UPDATE: 200612 <200612/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
PLEASE VISIT:
[<<<](http://www.stn-international.de/training_center/patents/stn_guide.pdf)

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
<http://scientific.thomson.com/support/patents/coverage/latestupdates/>

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
GUIDES, PLEASE VISIT:
<http://scientific.thomson.com/support/products/dwpi/>

>>> FAST-ALERTING ACCESS TO NEWLY-PUBLISHED PATENT
DOCUMENTATION NOW AVAILABLE IN DERWENT WORLD PATENTS INDEX
FIRST VIEW - FILE WPIFV.
FOR FURTHER DETAILS:
<http://scientific.thomson.com/support/products/dwpifv/>

>>> THE CPI AND EPI MANUAL CODES WILL BE REVISED FROM UPDATE 200601.
PLEASE CHECK:
<http://scientific.thomson.com/support/patents/dwpiref/reftools/classification>

>>> PLEASE BE AWARE OF THE NEW IPC REFORM IN 2006, SEE
http://www.stn-international.de/stndatabases/details/ipc_reform.html and
[<<<](http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf)

=> d que nos L155

L153 28 SEA FILE=WPIX ABB=ON PLU=ON LINHARDT R?/AU
L154 28293 SEA FILE=WPIX ABB=ON PLU=ON KIM Y?/AU
L155 2 SEA FILE=WPIX ABB=ON PLU=ON L153 AND L154

=> d que nos L160

L18 STR
L151 1 SEA FILE=WPIX SSS FUL L18
L152 1 SEA FILE=WPIX ABB=ON PLU=ON L151/DCR
L153 28 SEA FILE=WPIX ABB=ON PLU=ON LINHARDT R?/AU
L154 28293 SEA FILE=WPIX ABB=ON PLU=ON KIM Y?/AU
L155 2 SEA FILE=WPIX ABB=ON PLU=ON L153 AND L154
L156 5 SEA FILE=WPIX ABB=ON PLU=ON ACHARAN?
L160 2 SEA FILE=WPIX ABB=ON PLU=ON L155 AND (L152 OR L156)

=> s L155 or L160

L165 2 L155 OR L160

=> file uspatfull

FILE 'USPATFULL' ENTERED AT 15:31:11 ON 22 FEB 2006
CA INDEXING COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

FILE COVERS 1971 TO PATENT PUBLICATION DATE: 21 Feb 2006 (20060221/PD)
 FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)
 HIGHEST GRANTED PATENT NUMBER: US7003800
 HIGHEST APPLICATION PUBLICATION NUMBER: US2006037120
 CA INDEXING IS CURRENT THROUGH 21 Feb 2006 (20060221/UPCA)
 ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 21 Feb 2006 (20060221/PD)
 REVISED CLASS FIELDS (/NCL) LAST RELOADED: Dec 2005
 USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Dec 2005

=> d que nos L146

L144	28 SEA FILE=USPATFULL ABB=ON	PLU=ON	LINHARDT R?/AU
L145	4380 SEA FILE=USPATFULL ABB=ON	PLU=ON	KIM Y?/AU
L146	2 SEA FILE=USPATFULL ABB=ON	PLU=ON	L144 AND L145

=> d que nos L147

L1	STR			
L3	1062 SEA FILE=REGISTRY SSS FUL	L1		
L18	STR			
L20	79 SEA FILE=REGISTRY SUB=L3 SSS FUL	L18		
L25	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	ACHARAN SULFATE/CN	
L26	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	ACHARAN, N-DEACETYL-N-SULFO?/CN	
L124	1 SEA FILE=USPATFULL ABB=ON	PLU=ON	L20	
L125	2 SEA FILE=USPATFULL ABB=ON	PLU=ON	L25	
L126	1 SEA FILE=USPATFULL ABB=ON	PLU=ON	L26	
L129	SEL PLU=ON L25 1 - CHEM :	2 TERMS		
L130	4 SEA FILE=USPATFULL ABB=ON	PLU=ON	L129	
L131	SEL PLU=ON L26 1 - CHEM :	2 TERMS		
L132	1 SEA FILE=USPATFULL ABB=ON	PLU=ON	L131	
L133	4 SEA FILE=USPATFULL ABB=ON	PLU=ON	ACHARAN?	
L134	5 SEA FILE=USPATFULL ABB=ON	PLU=ON	L124 OR L125 OR L126 OR L130 OR L132 OR L133	
L135	120107 SEA FILE=USPATFULL ABB=ON	PLU=ON	?CANCER?	
L136	104777 SEA FILE=USPATFULL ABB=ON	PLU=ON	?TUMOR?	
L137	12054 SEA FILE=USPATFULL ABB=ON	PLU=ON	?TUMOUR?	
L138	34800 SEA FILE=USPATFULL ABB=ON	PLU=ON	?SARCOMA?	
L139	37564 SEA FILE=USPATFULL ABB=ON	PLU=ON	?NEOPLAS?	
L140	67199 SEA FILE=USPATFULL ABB=ON	PLU=ON	?CARCINO?	
L141	22227 SEA FILE=USPATFULL ABB=ON	PLU=ON	?ANGIOGEN?	
L142	4 SEA FILE=USPATFULL ABB=ON	PLU=ON	L134 AND (L135 OR L136 OR L137 OR L138 OR L139 OR L140 OR L141)	
L144	28 SEA FILE=USPATFULL ABB=ON	PLU=ON	LINHARDT R?/AU	
L145	4380 SEA FILE=USPATFULL ABB=ON	PLU=ON	KIM Y?/AU	
L146	2 SEA FILE=USPATFULL ABB=ON	PLU=ON	L144 AND L145	
L147	2 SEA FILE=USPATFULL ABB=ON	PLU=ON	L146 AND L142	

=> s L146 or L147

L166	2 L146 OR L147			
------	----------------	--	--	--

=> => dup rem L161 L162 L163 L164 L165 L166
 FILE 'CAPLUS' ENTERED AT 15:32:34 ON 22 FEB 2006
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

Krishnan 10/786613

02/22/2006

COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'MEDLINE' ENTERED AT 15:32:34 ON 22 FEB 2006

FILE 'EMBASE' ENTERED AT 15:32:34 ON 22 FEB 2006

Copyright (c) 2006 Elsevier B.V. All rights reserved.

FILE 'BIOSIS' ENTERED AT 15:32:34 ON 22 FEB 2006

Copyright (c) 2006 The Thomson Corporation

FILE 'WPIX' ENTERED AT 15:32:34 ON 22 FEB 2006

COPYRIGHT (C) 2006 THE THOMSON CORPORATION

FILE 'USPATFULL' ENTERED AT 15:32:34 ON 22 FEB 2006

CA INDEXING COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

PROCESSING COMPLETED FOR L161

PROCESSING COMPLETED FOR L162

PROCESSING COMPLETED FOR L163

PROCESSING COMPLETED FOR L164

PROCESSING COMPLETED FOR L165

PROCESSING COMPLETED FOR L166

L167 47 DUP REM L161 L162 L163 L164 L165 L166 (84 DUPLICATES REMOVED)
ANSWERS '1-35' FROM FILE CAPLUS
ANSWERS '36-37' FROM FILE MEDLINE
ANSWERS '38-46' FROM FILE BIOSIS
ANSWER '47' FROM FILE USPATFULL

=> d ibib abs hitind hitstr L167 1-35; d iall L167 36-46; d ibib abs kwic hitstr
L167 47

L167 ANSWER 1 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2005:87281 CAPLUS

DOCUMENT NUMBER: 142:193004

TITLE: Characterization of heparan sulfate from the unossified antler of Cervus elaphus

AUTHOR(S): Ha, Young Wan; Jeon, Byong Tae; Moon, Sang Ho; Toyoda, Hidenao; Toida, Toshihiko; Linhardt, Robert J.
; Kim, Yeong Shik

CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, Seoul, 110-460, S. Korea

SOURCE: Carbohydrate Research (2005), 340(3), 411-416
CODEN: CRBRAT; ISSN: 0008-6215

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The antler is the most rapidly growing tissue in the animal kingdom. According to previous reports, antler glycosaminoglycans (GAGs) consist of all kinds GAGs except for heparan sulfate (HS). Chondroitin sulfate is the major antler GAG component comprising 88% of the total uronic acid content. In the current study, we have isolated HS from antler for the first time and characterized it based on both NMR spectroscopy and disaccharide composition anal. Antler GAGs were isolated by protease treatment and followed by cetylpyridinium chloride precipitation. The sensitivity of antler

GAGs to heparin lyase III showed that this sample contained heparan sulfate. After incubation of antler GAGs with chondroitin lyase ABC, the HS-containing fraction was recovered by ethanol precipitation. The composition of HS disaccharides in this fraction was determined by its complete depolymer. with a

mixture of heparin lyase I, II, and III and anal. of the resulting disaccharides by the reversed-phase (RP) ion pairing-HPLC, monitored by the fluorescence detection using 2-cyanoacetamide as a post-column labeling reagent. Eight unsatd. disaccharides (Δ UA-GlcNAc, Δ UA-GlcNS, Δ UA-GlcNAc6S, Δ UA2S-GlcNAc, Δ UA-GlcNS6S, Δ UA2S-GlcNS, Δ UA2S-GlcNAc6S, Δ UA2S-GlcNS6S) were produced from antler HS by digestion with the mixture of heparin lyases. The total content of 2-O-sulfo disaccharide units in antler HS was higher than that of heparan sulfate from most other animal sources.

CC 6-4 (General Biochemistry)

Section cross-reference(s): 13

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 2 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2005:174300 CAPLUS

DOCUMENT NUMBER: 142:417327

TITLE: Quantitative analysis of chondroitin sulfate in raw materials, ophthalmic solutions, soft capsules, and liquid preparations

AUTHOR(S): Sim, Joon-Soo; Jun, Gyungjin; Toida, Toshihiko; Cho, So Yean; Choi, Don Woong; Chang, Seung-Yeup; Linhardt, Robert J.; Kim, Yeong Shik

CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, Seoul, 110-460, S. Korea

SOURCE: Journal of Chromatography, B: Analytical Technologies in the Biomedical and Life Sciences (2005), 818(2), 133-139

CODEN: JCBAAI; ISSN: 1570-0232

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors performed the quant. anal. of chondroitin sulfate (CS) obtained from raw materials and various pharmaceutical preps. To quantify CS content in raw materials and in an ophthalmic solution, each test sample and the authentic CS were 1st digested by chondroitinase ABC. The CS disaccharides produced were analyzed by strong anion-exchange high-performance liquid chromatog. (SAX-HPLC) and CS content was quantified by calculating the total peak areas of the disaccharides derived from a CS calibration curve. In the case of soft capsules, CS was 1st extracted with hexane followed by phenol-chloroform to remove oil and protein ingredients. The extracted CS samples were depolymd. by chondroitinase ABC and CS content was determined. Quant. anal. of the disaccharides derived from raw materials and an ophthalmic solution showed the CS contents (%) were 39.5 to 105.6 and 103.3, resp. In case of CS anal. in soft capsules and liquid preps., the overall recovery (%) of the spiked CS was 96.79 - 103.54 and 97.10 to 103.17, resp. In conclusion, the quant. anal. of the disaccharides produced by enzymic digestion can be used in the direct quantitation of CS containing pharmaceutical formulations.

CC 64-2 (Pharmaceutical Analysis)

Section cross-reference(s): 17, 63

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 3 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 2004:740132 CAPLUS

DOCUMENT NUMBER: 141:254539

TITLE: Antitumor inhibitors and use thereof

Krishnan 10/786613

02/22/2006

INVENTOR(S) : **Linhardt, Robert J.; Kim, Yeong Shik**
 PATENT ASSIGNEE(S) : University of Iowa Research Foundation, USA
 SOURCE: PCT Int. Appl., 28 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2004075848	A2	20040910	WO 2004-US5402	20040223
WO 2004075848	A3	20050414		
W: AE, AE, AG, AL, AL, AM, AM, AM, AT, AT, AU, AZ, AZ, BA, BB, BG, BG, BR, BR, BW, BY, BY, BZ, BZ, CA, CH, CN, CN, CO, CO, CR, CR, CU, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EC, EE, EE, EG, ES, ES, FI, FI, GB, GD, GE, GE, GH, GM, HR, HR, HU, HU, ID, IL, IN, IS, JP, JP, KE, KE, KG, KG, KP, KP, KR, KR, KZ, KZ, KZ, LC, LK, LR, LS, LS, LT, LU, LV, MA, MD, MD, MG, MK, MN, MW, MX, MX, MZ, MZ, NA, NI				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2005075312	A1	20050407	US 2004-786613	20040223
PRIORITY APPN. INFO.: US 2003-449661P P 20030224				
AB	The present invention provides pharmaceutical compns. for the treatment of cancer and inhibiting an increase in the volume or mass of a tumor, and methods for the treatment of cancer and inhibiting an increase in the volume or mass of a tumor.			
IC	ICM A61K			
CC	1-6 (Pharmacology)			
ST	antitumor angiogenesis inhibitor acharan sulfate lung carcinoma			
IT	Angiogenesis inhibitors Antitumor agents Sarcoma (antitumor angiogenesis inhibitor acharan sulfate)			
IT	Lung, neoplasm (carcinoma; antitumor angiogenesis inhibitor acharan sulfate)			
IT	Cell proliferation (inhibition, endothelial; antitumor angiogenesis inhibitor acharan sulfate)			
IT	Carcinoma (pulmonary; antitumor angiogenesis inhibitor acharan sulfate)			
IT	192662-57-0, Acharan sulfate RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses) (I and II; antitumor angiogenesis inhibitor acharan sulfate)			
IT	192662-57-0, Acharan sulfate RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses) (I and II; antitumor angiogenesis inhibitor acharan sulfate)			
RN	192662-57-0 CAPLUS			
CN	Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)			

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L167 ANSWER 4 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5
 ACCESSION NUMBER: 2004:304141 CAPLUS
 DOCUMENT NUMBER: 140:385739
 TITLE: Long duration of anticoagulant activity and protective effects of acharan sulfate in vivo
 AUTHOR(S): Li, Da-Wei; Lee, In Sun; Sim, Joon-Soo; Toida, Toshihiko; Linhardt, Robert J.; Kim, Yeong Shik
 CORPORATE SOURCE: College of Pharmacy, Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
 SOURCE: Thrombosis Research (2004), 113(1), 67-73
 CODEN: THBRAA; ISSN: 0049-3848
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Introduction: We previously reported that a new glycosaminoglycan, acharan sulfate (AS) from the African giant snail Achatina fulica showed anticoagulant activity in vitro, but was much less active when compared to heparin. In the present study, the anticoagulant activity of AS was investigated in vivo. Methods: AS and heparin were administered to mice and rats in various doses and the anticoagulant activities were measured by aPTT assay. Both were also compared in a thrombin-induced lethality animal model. As one of the possible mechanisms, AS-thrombin interaction was studied by using surface plasmon resonance spectroscopy. Results: I.V. administration of AS to mice prolonged the clotting time (aPTT) in a time and dose-dependent manner. Although the anticoagulant activity was low in rats, it steadily increased over 5 h after administration of AS (30 mg/kg). In contrast, the increase in aPTT induced by 5 mg/kg of heparin was restored to a normal level after 3 h. In a thrombin-induced lethality model in mice, AS (20 mg/kg) protected against lethality by 80%, while heparin (20 mg/kg) did not show any protective activity beyond 3.5 h post-administration. AS could be also detected in plasma even 5 h after i.v. administration to rats. The binding constant (KD) of AS to thrombin was 7.27×10^{-6} M, corresponding to moderate binding affinity. Conclusions: These results show that the longer duration of AS in blood could prolong the clotting time determined by aPTT and offering protection against thrombin-induced lethality. One possible mechanism may result from AS-thrombin interaction.

CC 1-8 (Pharmacology)
 ST anticoagulant acharan sulfate thrombin clotting time
 IT Anticoagulants
 Blood coagulation
 (long duration of anticoagulant activity and protective effects of acharan sulfate in vivo)
 IT 192662-57-0, Acharan sulfate
 RL: ANT (Analyte); PAC (Pharmacological activity); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (long duration of anticoagulant activity and protective effects of acharan sulfate in vivo)
 IT 9002-04-4, Thrombin
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (long duration of anticoagulant activity and protective effects of acharan sulfate in vivo)
 IT 192662-57-0, Acharan sulfate
 RL: ANT (Analyte); PAC (Pharmacological activity); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)

Krishnan 10/786613

02/22/2006

(long duration of anticoagulant activity and protective effects of
acharan sulfate in vivo)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 5 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 6

ACCESSION NUMBER: 2004:15557 CAPLUS

DOCUMENT NUMBER: 140:412133

TITLE:

Enhancement of heparin and heparin disaccharide
absorption by the Phytolacca americana saponins

AUTHOR(S): Cho, So Yean; Sim, Joon-soo; Kang, Sam Sik; Jeong,
Choon-sik; Linhardt, Robert J.; Kim,
Yeong Shik

CORPORATE SOURCE: Natural Products Research Institute, College of
Pharmacy, Seoul National University, Seoul, 110-460,
S. Korea

SOURCE: Archives of Pharmacal Research (2003), 26(12),
1102-1108

CODEN: APHRDQ; ISSN: 0253-6269

PUBLISHER: Pharmaceutical Society of Korea

DOCUMENT TYPE: Journal

LANGUAGE: English

AB We studied the effects of phytolaccosides, saponins from Phytolacca
americana, on the intestinal absorption of heparin in vitro and in vivo.
The absorption enhancing activity of these compds. (phytolaccosides B, D2,
E, F, G and I) was determined by changes in transepithelial elec. resistance
(TEER) and the transport amount of heparin disaccharide, the major repeating
unit of heparin, across Caco-2 cell monolayers. With the exception of
phytolaccoside G, all of them decreased TEER values and increased the
permeability in a dose-dependent and time-dependent manner. In vitro,
phytolaccosides B, D2, and E showed significant absorption enhancing
activities, while effects by phytolaccoside F and I were mild. In vivo,
phytolaccoside E increased the activated partial thromboplastin time
(APTT) and thrombin time, indicating that phytolaccoside E modulated the
transport of heparin in intestinal route. These results suggest that a
series of phytolaccosides from Phytolacca americana can be applied as
pharmaceutical excipients to improve the permeability of macromols. and
hydrophilic drugs having difficulty in absorption across the intestinal
epithelium.

CC 63-5 (Pharmaceuticals)

Section cross-reference(s): 1

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 6 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 7

ACCESSION NUMBER: 2003:209472 CAPLUS

DOCUMENT NUMBER: 139:207217

TITLE:

Suppression of tumor growth by a new glycosaminoglycan
isolated from the African giant snail Achatina fulica
Lee, Yeon Sil; Yang, Hyun Ok; Shin, Kuk Hyun; Choi,
Hyung Seok; Jung, Sang Hoon; Kim, Yong Man;
Oh, Deok Kun; Linhardt, Robert J.; Kim,
Yeong Shik

CORPORATE SOURCE: College of Pharmacy, Natural Products Research
Institute, Seoul National University, Seoul,
Jongno-Ku, 110-460, S. Korea

SOURCE: European Journal of Pharmacology (2003), 465(1-2),
191-198
CODEN: EJPHAZ; ISSN: 0014-2999

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB **Acharan sulfate** is a new type of glycosaminoglycan from the giant African snail, *Achatina fulica*. **Acharan sulfate**, which has a primary repeating disaccharide structure of α -d-N-acetylglucosaminyl-2-O-sulfo- α -l-iduronic acid, was studied as a potential antitumor agent in both *in vivo* and *in vitro* assays. The antiangiogenic activity of **acharan sulfate** was evaluated in the chorioallantoic membrane assay and by measuring its effect on the proliferation of calf pulmonary artery endothelial cells. *In vivo*, a matrigel plug assay showed that **acharan sulfate** suppressed basic fibroblast growth factor (bFGF)-stimulated angiogenesis and lowered the Hb content inside the plug. **Acharan sulfate** was administered s.c. at two doses for 15 days to C57BL/6 mice implanted with murine Lewis lung carcinoma in the back. It was also administered i.p. to ICR mice bearing sarcoma 180 at a dose of 30 mg/kg. S.c. injection of **acharan sulfate** at doses of 10 and 30 mg/kg decreased tumor weight and tumor volume by 40% without toxicity or resistance. I.p. injection of **acharan sulfate** also decreased tumor weight and volume by 40% in sarcoma 180-bearing mice. These results suggest that the antitumor activity of **acharan sulfate** may be related to the inhibition of angiogenesis.

CC 1-6 (Pharmacology)

ST glycosaminoglycan **acharan sulfate** antitumor lung carcinoma sarcoma *Achatina* snail; angiogenesis inhibitor glycosaminoglycan **acharan sulfate** antitumor *Achatina* snail

IT 192662-57-0, **Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(suppression of tumor growth by a new glycosaminoglycan isolated from the African giant snail *Achatina fulica*)

IT 192662-57-0, **Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(suppression of tumor growth by a new glycosaminoglycan isolated from the African giant snail *Achatina fulica*)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 7 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 2002:210512 CAPLUS

DOCUMENT NUMBER: 137:87808

TITLE: Enhancement of paracellular transport of heparin disaccharide across Caco-2 cell monolayers

AUTHOR(S): Cho, So Yean; Kim, Jong Sik; Li, Hong; Shim, Changkoo; Linhardt, Robert J.; Kim, Yeong Shik

CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea

SOURCE: Archives of Pharmacal Research (2002), 25(1), 86-92
CODEN: APHRDQ; ISSN: 0253-6269

PUBLISHER: Pharmaceutical Society of Korea

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The enhancement of the paracellular transport of heparin disaccharide (the major repeating unit of heparin) across Caco-2 cell monolayers by various absorption enhancers was tested. The cytotoxicity of these enhancers was also examined. The effects of Quillaja saponin, dipotassium glycyrrhizinate, 18 β -glycyrrhetic acid, sodium caprate, Triton X-100, and taurine were determined by measuring changes in transepithelial elec. resistance (TEER) and the amount of heparin disaccharide transported. 18 β -Glycyrrhetic acid and taurine decreased TEER and increased the permeability to heparin disaccharide in a concentrate- and time-dependent manner with little or negligible cytotoxicity. The results indicate that these absorption enhancers can widen the tight junction, which is a dominant paracellular absorption route of hydrophilic compds. It is possible that these absorption enhancers could be used as pharmaceutical excipients to improve the transport of macromols. and hydrophilic drugs having low permeability across the intestinal epithelium.

CC 1-2 (Pharmacology)

REFERENCE COUNT:

34

THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 8 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 9

ACCESSION NUMBER: 2001:68553 CAPLUS

DOCUMENT NUMBER: 134:262794

TITLE: Active Site of Chondroitin AC Lyase Revealed by the Structure of Enzyme-Oligosaccharide Complexes and Mutagenesis

AUTHOR(S): Huang, Weijun; Boju, Lorena; Tkalec, Lydia; Su, Hongsheng; Yang, Hyun-Ok; Gunay, Nur Sibel; Linhardt, Robert J.; Kim, Yeong Shik ; Matte, Allan; Cygler, Miroslaw

CORPORATE SOURCE: Biotechnology Research Institute, Montreal, QC, H4P 2R2, Can.

SOURCE: Biochemistry (2001), 40(8), 2359-2372
CODEN: BICHAW; ISSN: 0006-2960

PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal

LANGUAGE: English

AB The crystal structures of Flavobacterium heparinum chondroitin AC lyase (chondroitinase AC; E.C. 4.2.2.5) bound to dermatan sulfate hexasaccharide (DShexa), tetrasaccharide (DStetra), and hyaluronic acid tetrasaccharide (HAtetra) have been refined at 2.0, 2.0, and 2.1 Å resolution, resp. The structure of the Tyr234Phe mutant of AC lyase bound to a chondroitin sulfate tetrasaccharide (CStetra) has also been determined to 2.3 Å resolution. For each of these complexes, four (DShexa and CStetra) or two (DStetra and HAtetra) ordered sugars are visible in electron d. maps. The lyase AC DShexa and CStetra complexes reveal binding at four subsites, -2, -1, +1, and +2, within a narrow and shallow protein channel. We suggest that subsites -2 and -1 together represent the substrate recognition area, +1 is the catalytic subsite and +1 and +2 together represent the product release area. The putative catalytic site is located between the substrate recognition area and the product release area, carrying out catalysis at the +1 subsite. Four residues near the catalytic site, His225, Tyr234, Arg288, and Glu371 together form a catalytic tetrad. The mutations His225Ala, Tyr234Phe, Arg288Ala, and Arg292Ala, revealed residual activity for only the Arg292Ala mutant. Structural data indicate that Arg292 is primarily involved in recognition of the N-acetyl and sulfate moieties of galactosamine, but does not participate directly in catalysis. Candidates for the general base, removing the proton attached to C-5 of the glucuronic acid at the +1 subsite, are Tyr234, which could be transiently deprotonated during catalysis, or His225. Tyrosine 234 is a candidate to protonate the leaving group. Arginine 288 likely

contributes to charge neutralization and stabilization of the enolate anion intermediate during catalysis.

CC 7-5 (Enzymes)

Section cross-reference(s) : 75

REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 9 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 10

ACCESSION NUMBER: 2001:820002 CAPLUS

DOCUMENT NUMBER: 136:99401

TITLE: Localization and characterization of acharan sulfate in the body of the giant African snail Achatina fulica

AUTHOR(S): Jeong, Jia; Toida, Toshihiko; Muneta, Yuki; Kosiishi, Ichiro; Imanari, Toshio; Linhardt, Robert J.; Choi, Hyung Seok; Wu, Song Ji; Kim, Yeong Shik

CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea

SOURCE: Comparative Biochemistry and Physiology, Part B: Biochemistry & Molecular Biology (2001), 130B(4), 513-519

CODEN: CBPBB8; ISSN: 1096-4959

PUBLISHER: Elsevier Science Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Acharan sulfate is a glycosaminoglycan (GAG), having the structure →4-2-acetamido-2-deoxy- α -D-glucopyranose(1 4)-2-sulfo- α -1-idopyranosyluronic acid 1→, isolated from the body of the giant African snail Achatina fulica. This GAG represents 3-5% of the dry weight of this snail's soft body tissues. Frozen sections and polyester wax sections of the snail's body were stained by Alcian blue-periodic acid-Schiff's reagent (PAS) to localize acharan sulfate. Alcian blue staining indicated that GAG was mainly secreted into the outer surface of the body from internal granules. A highly mucous material was collected and treated and the acharan sulfate was recovered by ethanol and cetyl pyridinium chloride precipitation. Crude acharan sulfate was purified by DEAE-Sephadex ion-exchange chromatog. Depolymer. of intact mucus and purified acharan sulfate fractions by heparin lyase II (heparitinase I) from Flavobacterium heparinum produced an unsatd. disaccharide as a major product, establishing the repeating unit of acharan sulfate. These results demonstrate that mucus in the granule and secreted to the outside of the body is composed entirely of acharan sulfate.

CC 12-1 (Nonmammalian Biochemistry)

ST snail acharan sulfate

IT Achatina fulica

Mucus

(localization and characterization of acharan sulfate in the body of the giant African snail Achatina fulica)

IT 192662-57-0, Acharan sulfate

RL: BSU (Biological study, unclassified); BIOL (Biological study)

(localization and characterization of acharan sulfate in the body of the giant African snail Achatina fulica)

IT 192662-57-0, Acharan sulfate

RL: BSU (Biological study, unclassified); BIOL (Biological study)

(localization and characterization of acharan sulfate in the body of the giant African snail Achatina fulica)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME).

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 10 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 11
 ACCESSION NUMBER: 2001:453852 CAPLUS
 DOCUMENT NUMBER: 135:179758
 TITLE: Enzymatic preparation of heparin disaccharides as building blocks in glycosaminoglycan synthesis
 AUTHOR(S): Kim, Yeong Shik; Thanawiroon, Charuwan;
 Bazin, Helene G.; Kerns, Robert J.; Linhardt, Robert J.
 CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
 SOURCE: Preparative Biochemistry & Biotechnology (2001), 31(2), 113-124
 CODEN: PBBIF4; ISSN: 1082-6068
 PUBLISHER: Marcel Dekker, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 135:179758
 AB Pharmaceutical heparin and heparan sulfate, isolated from a side-stream of a com. heparin manufacturing process, have been enzymically depolymerized with heparin lyases obtained from Flavobacterium heparinum. Heparin afforded a trisulfated disaccharide product that was recovered from the reaction mixture using gel permeation chromatog. Heparan sulfate afforded unsulfated disaccharide that was conveniently recovered from the product mixture by ion exchange chromatog. Both disaccharides were obtained in gram amts. at 90% or higher purity. Both enzymically prepared disaccharides were chemically protected to prepare building blocks required for the future chemical synthesis of therapeutically valuable heparin oligosaccharides.
 CC 16-2 (Fermentation and Bioindustrial Chemistry)
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 11 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 12
 ACCESSION NUMBER: 2000:121629 CAPLUS
 DOCUMENT NUMBER: 132:161252
 TITLE: N-acetylglucosamine-2-O-sulfated uronic acid compounds for angiogenesis inhibitors, and therapeutic use thereof
 INVENTOR(S): Bernfield, Merton; Kim, Yeong Shik;
 Linhardt, Robert J.
 PATENT ASSIGNEE(S): Children's Medical Center Corp, USA; The University of Iowa Research Foundation
 SOURCE: U.S., 11 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6028061	A	20000222	US 1998-99296	19980618
PRIORITY APPLN. INFO.: US 1998-99296 19980618				

AB A mol. having as its major repeating units N-acetylglucosamine alternating in sequence with 2-O-sulfated uronic acid inhibits FGF mitogenicity, and thus is useful in inhibiting angiogenesis. Addnl., the mol. has low

toxicity and inhibits FGF mitogenicity without affecting anticoagulant activity. One preferred mol. is a glycosaminoglycan, e.g. acharan sulfate. The mols. are in pharmaceutical compns. that can be used in the treatment of diseases which are angiogenesis-dependent.

IC ICM A61K031-715
 ICS C07H013-12
 INCL 514054000
 CC 1-8 (Pharmacology)
 Section cross-reference(s): 33, 63
 ST angiogenesis inhibition acetylglucosamine sulfated uronate compd; glycosaminoglycan angiogenesis inhibition; acharan sulfate angiogenesis inhibition
 IT 192662-56-9P, N-Sulfoacharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
 (acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
 IT 192662-57-0, Acharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
 (acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
 IT 192662-56-9P, N-Sulfoacharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
 (acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
 RN 192662-56-9 CAPLUS
 CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 192662-57-0, Acharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
 (acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
 RN 192662-57-0 CAPLUS
 CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 12 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 13
 ACCESSION NUMBER: 2000:757505 CAPLUS
 DOCUMENT NUMBER: 134:56899
 TITLE: Preparation and structural determination of dermatan sulfate-derived oligosaccharides
 AUTHOR(S): Yang, Hyun Ok; Gunay, Nur Sibel; Toida, Toshihiko; Kuberan, Balagurunathan; Yu, Guangli; Kim, Yeong Shik; Linhardt, Robert J.
 CORPORATE SOURCE: Department of Chemistry, Division of Medicinal and Natural Products Chemistry and Department of Chemical

Krishnan 10/786613

02/22/2006

and Biochemical Engineering, University of Iowa, Iowa City, IA, 52242, USA

SOURCE: Glycobiology (2000), 10(10), 1033-1040
CODEN: GLYCE3; ISSN: 0959-6658
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Eight oligosaccharides were prepared from dermatan sulfate (DS) and their structures were elucidated. Porcine intestinal mucosal DS was subjected to controlled depolymerization using chondroitin ABC lyase (chondroitinase ABC). The oligosaccharide mixture formed was fractionated by low-pressure gel permeation chromatog. (GPC). Size uniform mixts. of disaccharides, tetrasaccharides, hexasaccharides, octasaccharides, decasaccharides, and dodecasaccharides were obtained. Each size-fractionated mixture was then purified on the basis of charge by repetitive semi-preparative strong-anion-exchange (SAX) high-performance liquid chromatog. (HPLC). This approach has led to the isolation of six homogeneous oligosaccharides. The size of the oligosaccharides were determined using GPC-HPLC. Treatment of tetrasaccharide and hexasaccharide fragments with Hg(OAc)₂ afforded trisaccharide and pentasaccharide products, resp. The purity of the oligosaccharides obtained was confirmed by anal. SAX-HPLC, and capillary electrophoresis (CE). The mol. mass and degree of sulfation of the eight purified oligosaccharides were elucidated using electrospray ionization (ESI) mass spectrometry and their structures were established with high field NMR (NMR) spectroscopy. These DS-oligosaccharides are currently being used to study for interaction of the DS with biol. important proteins.

CC 33-8 (Carbohydrates)

Section cross-reference(s): 7, 9, 22

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 13 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 14

ACCESSION NUMBER: 2000:583737 CAPLUS

DOCUMENT NUMBER: 133:146678

TITLE: Purification and characterization of a novel

heparinase from *Bacteroides stercoris* HJ-15

AUTHOR(S): Kim, Byung-Taek; Kim, Wan-Seok; Kim, Yeong Shik; Linhardt, Robert J.; Kim, Dong-Hyun

CORPORATE SOURCE: College of Pharmacy, Kyung Hee University, Seoul, 130-701, S. Korea

SOURCE: Journal of Biochemistry (Tokyo) (2000), 128(2), 323-328

CODEN: JOBIAO; ISSN: 0021-924X

PUBLISHER: Japanese Biochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A novel type of heparinase (heparin lyase) (I) was purified from *B. stercoris* HJ-15, isolated from human intestine, which produced 3 kinds of heparinases. I was purified to apparent homogeneity by a combination of QAE-cellulose, DEAE-cellulose, CM-Sephadex C-50, hydroxylapatite, and HiTrap SP chromatogs. with a final specific activity of 19.5 μ mol/min/mg. I showed optimal activity at pH 7.2 and 45°, and the presence of 300 mM KCl greatly enhanced its activity. Purified I was inhibited by Cu²⁺, Pb²⁺, and some agents that modified His and Cys residues, and activated by reducing agents such as dithiothreitol and 2-mercaptoethanol. Purified *Bacteroides* I was an eliminase that showed its greatest activity on bovine intestinal heparan sulfate, and to a lesser extent on porcine intestinal heparan sulfate and heparin. I did

not act on acharan sulfate, but de-O-sulfated acharan sulfate and N-sulfoacharan sulfate were found to be poor substrates. The substrate specificity of I was similar to that of Flavobacterium heparinase II. However, an internal amino acid sequence of purified Bacteroides I showed significant (73%) homol. to Flavobacterium heparinase III and only 43% homol. to Flavobacterium heparinase II. These findings suggest that the Bacteroides I is a novel enzyme degrading glycosaminoglycans.

CC 7-2 (Enzymes)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 14 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 15
 ACCESSION NUMBER: 1999:792899 CAPLUS
 DOCUMENT NUMBER: 132:204768
 TITLE: Crystal Structure of Chondroitinase B from Flavobacterium heparinum and its Complex with a Disaccharide Product at 1.7 Å Resolution
 AUTHOR(S): Huang, Weijun; Matte, Allan; Li, Yunge; Kim, Yeong Shik; Linhardt, Robert J.; Su, Hongsheng; Cygler, Miroslaw
 CORPORATE SOURCE: Biotechnology Research Institute, Montreal, QC, H4P 2R2, Can.
 SOURCE: Journal of Molecular Biology (1999), 294(5), 1257-1269
 CODEN: JMOBAK; ISSN: 0022-2836
 PUBLISHER: Academic Press
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Glycosaminoglycans (GAGs) are a family of acidic heteropolysaccharides, including such mols. as chondroitin sulfate, dermatan sulfate, heparin and keratan sulfate. Cleavage of the O-glycosidic bond within GAGs can be accomplished by hydrolases as well as lyases, yielding disaccharide and oligosaccharide products. We have determined the crystal structure of chondroitinase B, a glycosaminoglycan lyase from Flavobacterium heparinum, as well as its complex with a dermatan sulfate disaccharide product, both at 1.7 Å resolution. Chondroitinase B adopts the right-handed parallel β-helix fold, found originally in pectate lyase and subsequently in several polysaccharide lyases and hydrolases. Sequence homol. between chondroitinase B and a mannuronate lyase from *Pseudomonas* sp. suggests this protein also adopts the β-helix fold. Binding of the disaccharide product occurs within a pos. charged cleft formed by loops extending from the surface of the β-helix. Amino acid residues responsible for recognition of the disaccharide, as well as potential catalytic residues, have been identified. Two arginine residues, Arg318 and Arg364, are found to interact with the sulfate group attached to O-4 of N-acetylgalactosamine. Cleavage of dermatan sulfate likely occurs at the reducing end of the disaccharide, with Glu333 possibly acting as the general base. (c) 1999 Academic Press.

CC 7-5 (Enzymes)

Section cross-reference(s): 75

REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 15 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 16
 ACCESSION NUMBER: 1999:804912 CAPLUS
 DOCUMENT NUMBER: 132:105537
 TITLE: A new sulfated β-galactan from clams with anti-HIV activity
 AUTHOR(S): Amornruth, Chaidedgumjorn; Toida, Toshihiko; Imanari, Toshio; Woo, Eun-Rhan; Park, Hokoon; Linhardt,

CORPORATE SOURCE: Robert; Wu, Song Ji; Kim, Yeong Shik
 Faculty of Pharmaceutical Sciences, Chiba University,
 Chiba, 263-8522, Japan

SOURCE: Carbohydrate Research (1999), 321(1-2), 121-127
 CODEN: CRBRAT; ISSN: 0008-6215

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new polysaccharide composed of galactan sulfate with a β -(1 \rightarrow 3)-glycosidic linkage has been isolated from the marine clam species *Meretrix petechialis*. The polysaccharide was homogeneous in its composition containing D-galactose. The glycosidic linkage was examined by 2D DQF-COSY and 2D NOESY spectroscopy. The coupling constant of anomeric proton was 7.8 Hz, suggesting a β -galacto configuration. The downfield shift of H-2 of galactose residue demonstrated the presence of 2-O-sulfonate group. TQF-COSY confirmed that the C-6 position was substituted with a sulfonate group. The anti-HIV activity of the polysaccharides has been evaluated by the inhibition of syncytia formation. The fusion index and percentage fusion inhibition of sulfated galactan were 0.34 and 56% at 200 μ g/mL.

CC 12-1 (Nonmammalian Biochemistry)
 Section cross-reference(s): 1, 33

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

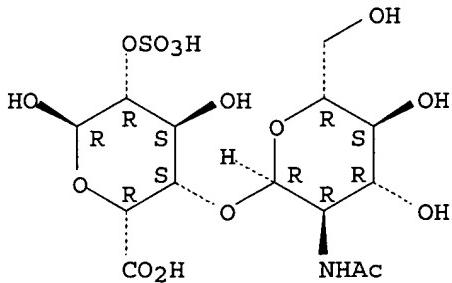
L167 ANSWER 16 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 17
 ACCESSION NUMBER: 1998:567562 CAPLUS
 DOCUMENT NUMBER: 129:276176
 TITLE: Determination of the structure of oligosaccharides prepared from acharan sulfate
 AUTHOR(S): Kim, Yeong Shik; Ahn, Mi Young; Wu, Song Ji;
 Kim, Dong-Hyun; Toida, Toshihiko; Teesch, Lynn M.;
 Park, Youmie; Yu, Guyong; Lin, Jihon; Linhardt, Robert J.
 CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
 SOURCE: Glycobiology (1998), 8(9), 869-877
 CODEN: GLYCE3; ISSN: 0959-6658
 PUBLISHER: Oxford University Press
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The fine structure of acharan sulfate, a recently discovered glycosaminoglycan isolated from *Achatina fulica*, was examined. This glycosaminoglycan has a major disaccharide repeating unit of \rightarrow 4)- α -D-GlcNpAc(1 \rightarrow 4)- α -L-IdoAp2S(1 \rightarrow (where GlcNpAc is N-acetylglucosamine, IdoAp is iduronic acid, and S is sulfate) making it structurally related to both heparin and heparan sulfate. Using heparin lyases prepared from *Flavobacterium heparinum* and a newly isolated heparinase from *Bacteroides stercoris*, the controlled enzymic depolymerization of acharan sulfate was undertaken to prepare a mixture of oligosaccharides. Fractionation of this mixture of oligosaccharides by strong-anion-exchange high performance liquid chromatography afforded oligosaccharides that capillary electrophoresis established were sufficiently pure for structural characterization. Electro-spray ionization mass spectrometry identified two series of oligosaccharides, one derived from acharan sulfate's major repeating unit and a second minor group of under-sulfated oligosaccharides. Proton NMR spectroscopy established the structure of these two classes of oligosaccharides to be Δ UAp2S(1 \rightarrow [4]- α -D-

GlcNpAc(1→4)-α-L-IdoAp2S(1→)n4)-D-GlcNpAca,β (where n = 0,1,2,3 and ΔUAp is 4-deoxy-α-L-threo-hex-4-enopyranosyluronic acid) and AUAp(1→[4]-α-D-GlcNpAc(1→4)-α-L-IdoAp2S(1→)m-D-GlcNpAca,β (where m = 1,2,3). These results suggest the presence of minor sequence variants in acharan sulfate containing unsulfated iduronic acid having the structure →4)-α-D-GlcNpAc-(1→4)-α-L-IdoAp(1→.

- CC 33-8 (Carbohydrates)
 Section cross-reference(s): 12
 ST acharan sulfate glycosaminoglycan repeating unit;
 Achatina fulica polysaccharide mol structure
 IT Molecular structure
 (structure of oligosaccharides prepared from acharan sulfate)
 IT Glycosaminoglycans, miscellaneous
 RL: MSC (Miscellaneous)
 (structure of oligosaccharides prepared from acharan sulfate)
 IT Achatina fulica
 (structure of oligosaccharides prepared from acharan sulfate from)
 IT 177791-14-9P
 RL: BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
 (repeating unit of acharan sulfate isolated from Achatina fulica)
 IT 192662-57-0, Acharan sulfate
 RL: MSC (Miscellaneous)
 (structure of oligosaccharides prepared from by enzymic depolymer.)
 IT 177791-14-9P
 RL: BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
 (repeating unit of acharan sulfate isolated from Achatina fulica)
 RN 177791-14-9 CAPLUS
 CN α-L-Idopyranuronic acid, 4-O-[2-(acetylamino)-2-deoxy-α-D-glucopyranosyl]-, 2-(hydrogen sulfate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



- IT 192662-57-0, Acharan sulfate
 RL: MSC (Miscellaneous)
 (structure of oligosaccharides prepared from by enzymic depolymer.)
 RN 192662-57-0 CAPLUS
 CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

Krishnan 10/786613

02/22/2006

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 17 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 18
ACCESSION NUMBER: 1998:503220 CAPLUS
DOCUMENT NUMBER: 129:200293
TITLE: Characterization of a *Bacteroides* species from human intestine that degrades glycosaminoglycans
AUTHOR(S): Ahn, Mi Young; Shin, Kuk Hyun; Kim, Dong-Hyun; Jung, Eun-Ah; Toida, Toshihiko; Linhardt, Robert J.; Kim, Yeong Shik
CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Canadian Journal of Microbiology (1998), 44(5), 423-429
PUBLISHER: National Research Council of Canada
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Polysaccharide lyases that can degrade glycosaminoglycans (GAGs) were identified in an anaerobic strain living in the human intestine. The strain was isolated from the stool of a healthy male and identified as *Bacteroides* sp. strain HJ-15. A detailed taxonomical study indicated the species is a strain of *Bacteroides stercoris*. The isolate was cultured and the polysaccharide lyase activity was partially purified. This enzyme preparation could act on GAGs containing either glucosamine or galactosamine, suggesting the presence of both heparinases and chondroitinases. Various GAGs were incubated with the partially purified enzyme and the products formed were analyzed by strong anion-exchange high performance liquid chromatog. and proton NMR spectroscopy. These studies demonstrated the presence of at least two types of polysaccharide lyases: heparin lyase and chondroitin sulfate lyase. The eliminative mechanism of these lyase enzymes was confirmed through the isolation of unsatd. disaccharide products. The heparin lyase acted on both heparin and acharan sulfate, a GAG recently isolated from *Achatina fulica*. The *Bacteroides* chondroitin lyase acted on chondroitin sulfates A, B (dermatan sulfate), and C, resembling chondroitin lyase ABC. The presence of a GAG-degrading organism in human intestine may pose problems for the effective oral administration of GAG drugs.
CC 10-2 (Microbial, Algal, and Fungal Biochemistry)
Section cross-reference(s): 7
IT 9005-49-6, Heparin, biological studies 24967-93-9, Chondroitin sulfate A 24967-94-0, Chondroitin sulfate B 25322-46-7, Chondroitin sulfate C 192662-57-0, Acharan sulfate
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(characterization of a *Bacteroides* species from human intestine that degrades glycosaminoglycans)
IT 192662-57-0, Acharan sulfate
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(characterization of a *Bacteroides* species from human intestine that degrades glycosaminoglycans)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 18 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 19
 ACCESSION NUMBER: 1998:798038 CAPLUS
 DOCUMENT NUMBER: 130:162744
 TITLE: Chemical sulfonation and anticoagulant activity of
acharan sulfate
 AUTHOR(S): Wu, Song Ji; Chun, Moon Woo; Shin, Kuk Hyun; Toida,
 Toshihiko; Park, Youmie; Linhardt, Robert J.
 ; Kim, Yeong Shik
 CORPORATE SOURCE: Natural Products Research Institute, Seoul National
 University, Seoul, 110-460, S. Korea
 SOURCE: Thrombosis Research (1998), 92(6), 273-281
 CODEN: THBRAA; ISSN: 0049-3848
 PUBLISHER: Elsevier Science Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB **Acharan sulfate** is a glycosaminoglycan prepared from the giant African snail, *Achatina fulica*. This polysaccharide has a repeating disaccharide structure of →4)-2-deoxy-2-acetamido-α-D-glucopyra-nose (1→4)-2-sulfo-α-L-idopyranosyluronic acid (1→). Its structure is related to heparin and heparan sulfate but is distinctly different from all known members of these classes of glycosaminoglycans. Because of its structural similarities to heparin, chemical modified **acharan sulfate** was studied to understand the chemical structure effected its anticoagulant activity. After de-N-acetylation, **acharan sulfate** was N-sulfonated using either chlorosulfonic acid-pyridine or sulfur trioxide-trimethylamine complex. The sulfate level in these products ranged from 22 to 24% (weight/weight), significantly less than that of heparin at 36%. The mol. weight of both N-sulfoacharan sulfates were comparable with that of heparin. In vitro anticoagulant activity assays showed that N-sulfoacharan sulfate derivs. were moderately active for the inhibition of thrombin and neither product showed any measurable anti-factor Xa activity. The differences in the activities of N-sulfoacharan sulfates produced by these two methods are probably ascribable to a small level of concomitant O-sulfonation obtained when using chlorosulfonic acid-pyridine.

CC 1-3 (Pharmacology)
 ST sulfonation **acharan sulfate** glycosaminoglycan thrombin inhibiting structure; sulfoacharan sulfate deriv anticoagulant heparin structure; factor Xa sulfoacharan sulfate anticoagulant MSBAR
 IT *Achatina fulica*
 Anticoagulants
 Sulfonation
 (chemical sulfonation and anticoagulant activity of **acharan sulfate**)
 IT Glycosaminoglycans, biological studies
 RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
 (chemical sulfonation and anticoagulant activity of **acharan sulfate**)
 IT Structure-activity relationship
 (thrombin-inhibiting; chemical sulfonation and anticoagulant activity of **acharan sulfate**)
 IT 192662-56-9D, N-Sulfoacharan sulfate, derivs.
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
 (chemical sulfonation and anticoagulant activity of **acharan sulfate**)
 IT 9002-05-5, Factor Xa
 RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL

(Biological study); PROC (Process)
 (chemical sulfonation and anticoagulant activity of acharan sulfate)

IT 192662-57-0, Acharan sulfate
 RL: BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
 (chemical sulfonation and anticoagulant activity of acharan sulfate)

IT 9005-49-6, Heparin, biological studies 9050-30-0, Heparan sulfate
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (chemical sulfonation and anticoagulant activity of acharan sulfate)

IT 192662-56-9D, N-Sulfoacharan sulfate, derivs.
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
 (chemical sulfonation and anticoagulant activity of acharan sulfate)

RN 192662-56-9 CAPLUS

CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 192662-57-0, Acharan sulfate
 RL: BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
 (chemical sulfonation and anticoagulant activity of acharan sulfate)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 19 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 20
 ACCESSION NUMBER: 1997:410216 CAPLUS
 DOCUMENT NUMBER: 127:117569
 TITLE: Glycosaminoglycans can influence fibroblast growth factor-2 mitogenicity without significant growth factor binding
 AUTHOR(S): Wang, Huiming; Toida, Toshihiko; Kim, Yeong Shik; Capila, Ishan; Hileman, Ronald E.; Bernfield, Merton; Linhardt, Robert J.
 CORPORATE SOURCE: Department of Pediatrics, Harvard Medical School, Boston, MA, 02115, USA
 SOURCE: Biochemical and Biophysical Research Communications (1997), 235(2), 369-373
 CODEN: BBRCA9; ISSN: 0006-291X
 PUBLISHER: Academic
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Fibroblast growth factors are important heparin binding, mitogenic proteins. The binding site in heparin and heparan sulfate for fibroblast growth factor-2 (basic fibroblast growth factor) has been described as rich in glucosamine-2-sulfate 1→4 linked to iduronic acid-2-sulfate. The glucosamine residue in the heparin binding site is also 6-sulfated. A new glycosaminoglycan, acharan sulfate, has been chemically modified to prepare a polysaccharide, N-sulfoacharan sulfate, consisting of glucosamine-2-sulfate 1→4 linked to iduronic acid-2-sulfate. Acharan sulfate binds very weakly to fibroblast

growth factor-2 while N-sulfoacharan sulfate binds with nearly the same affinity as heparin. Mitogenicity studies were performed using heparan sulfate-free cells stably transfected with fibroblast growth factor receptor-1. Acharan sulfate inhibits heparin's enhancement of fibroblast growth factor-2 mitogenic activity, without affecting cell viability, while N-sulfoacharan sulfate shows heparin-like activity but at a greatly reduced level. These results suggest addnl. mechanisms not requiring high affinity glycosaminoglycan binding to fibroblast growth factor-2 may be important in its mitogenic activity.

CC 2-5 (Mammalian Hormones)
 IT 9005-49-6, Heparin, biological studies 106096-93-9, Basic fibroblast growth factor 192662-56-9, N-Sulfoacharan sulfate
192662-57-0, Acharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
 (glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding)
 IT 192662-56-9, N-Sulfoacharan sulfate 192662-57-0,
Acharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
 (glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding)
 RN 192662-56-9 CAPLUS
 CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 192662-57-0 CAPLUS
 CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L167 ANSWER 20 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 21
 ACCESSION NUMBER: 1996:309677 CAPLUS
 DOCUMENT NUMBER: 125:30324
 TITLE: A new glycosaminoglycan from the giant African snail
 Achatina fulica
 AUTHOR(S): Kim, Yeong S.; Jo, You Y.; Chang, Il M.;
 Toida, Toshihiko; Park, Youmie; Linhardt, Robert
 J.
 CORPORATE SOURCE: Nat. Products Res. Inst., Seoul Natl. Univ., Seoul,
 110-460, S. Korea
 SOURCE: Journal of Biological Chemistry (1996), 271(20),
 11750-11755
 CODEN: JBCHA3; ISSN: 0021-9258
 PUBLISHER: American Society for Biochemistry and Molecular
 Biology
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A new glycosaminoglycan has been isolated from the giant African snail
 Achatina fulica. This polysaccharide had a mol. weight of 29,000, calculated
 based on the viscometry, and a uniform repeating disaccharide structure of
 →4)-2-acetyl,2-deoxy-α-D-glucopyranose (1→4)-2-sulfo-
 α-L-idopyranosyluronic acid (1→. This polysaccharide
 represents a new, previously undescribed glycosaminoglycan. It is related
 to the heparin and heparan sulfate families of glycosaminoglycans but is
 distinctly different from all known members of these classes of

glycosaminoglycans. The structure of this polysaccharide, with adjacent N-acetylglucosamine and 2-sulfo-iduronic acid residues, also poses interesting questions about how it is made in light of our current understanding of the biosynthesis of heparin and heparan sulfate. This glycosaminoglycan represents 3-5% of the dry weight of this snail's soft body tissues, suggesting important biol. roles for the survival of this organism, and may offer new means to control this pest. Snail glycosaminoglycan tightly binds divalent cations, such as copper(II), suggesting a primary role in metal uptake in the snail. Finally, this new polysaccharide might be applied, like the Escherichia coli K5 capsular polysaccharide, to the study of glycosaminoglycan biosynthesis and to the semisynthesis of new glycosaminoglycan analogs having important biol. activities.

CC 12-1 (Nonmammalian Biochemistry)
Section cross-reference(s): 33

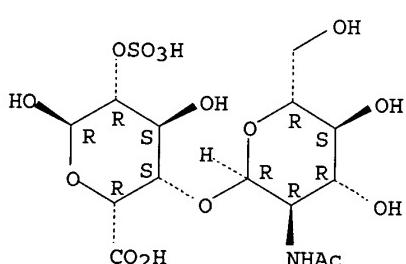
IT 177791-14-9D, repeating unit
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(glycosaminoglycan isolation and structural characterization from giant African snail)

IT 177791-14-9D, repeating unit
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(glycosaminoglycan isolation and structural characterization from giant African snail)

RN 177791-14-9 CAPLUS

CN α -L-Idopyranuronic acid, 4-O-[2-(acetylamino)-2-deoxy- α -D-glucopyranosyl]-, 2-(hydrogen sulfate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L167 ANSWER 21 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 22
ACCESSION NUMBER: 1995:469480 CAPLUS
DOCUMENT NUMBER: 123:83881
TITLE: Analysis of fluorescently labeled sugars by reversed-phase ion-pairing high-performance liquid chromatography
AUTHOR(S): Kim, Y. S.; Liu, J.; Han, X. J.; Pervin, A.; Linhardt, R. J.
CORPORATE SOURCE: Natural Products Inst., Seoul Natl. Univ., Seoul, S. Korea
SOURCE: Journal of Chromatographic Science (1995), 33(4), 162-7
PUBLISHER: CODEN: JCHSBZ; ISSN: 0021-9665
DOCUMENT TYPE: Preston Publications
LANGUAGE: Journal
English

AB Reducing sugars, including monosaccharides, disaccharides, and a trisaccharide, are derivatized by reductive amination with 7-amino-1,3-naphthalene disulfonic acid. Reversed-phase ion-pairing high-performance liquid chromatog. is then used to sep. these visibly fluorescent, charged conjugates. Isocratic elution with triethylamine-acetic acid from a Ph column, a C18 column, and C18 and Ph columns in series gives good sepn. of a mixture of monosaccharides and a mixture of disaccharides and trisaccharides. Resolution of certain monosaccharides and trisaccharides. Resolution of certain monosaccharides is enhanced by replacing triethylamine with a chiral amine and using gradient elution. Further enhancement of resolution is achieved by adding phenylboronic acid, an agent capable of complexing with the vicinal diol functionality present in many sugars. The trimethylamine-acetic acid eluant permits detection by either UV absorbance or fluorescence, and the addition of a chiral ion-pairing agent or a phenylboronic acid complexing agent necessitates fluorescence detection. A reversible Schiff base form of the fluorescent sugar conjugate is prepared; it is sufficient stable to perform fractionations but sufficiently unstable to be converted to a fluorescent label and reducing sugar.

CC 33-7 (Carbohydrates)

L167 ANSWER 22 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 23

ACCESSION NUMBER: 1992:443868 CAPLUS
 DOCUMENT NUMBER: 117:43868
 TITLE: Lectin affinity electrophoresis for the separation of fluorescently labeled sugar derivatives
 AUTHOR(S): Lee, K. B.; Kim, Y. S.; Linhardt, R. J.

CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
 SOURCE: Analytical Biochemistry (1992), 203(2), 206-10
 CODEN: ANBCA2; ISSN: 0003-2697

DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Lectin affinity electrophoresis was applied to the separation of charged, fluorescent conjugates of disaccharides. Four fluorescent conjugates were prepared by reductive amination of α -D-Man-(1 \rightarrow 3)-D-Man, α -D-Gal-(1 \rightarrow 4)-D-Gal, α -D-Gal-(1 \rightarrow 6)-D-Glc, and β -D-Gal-(1 \rightarrow 4)-D-Glc in the presence of 7-amino-1,3-naphthalenedisulfonic acid. These charged fluorescent-disaccharide conjugates have identical mol. weight and in the absence of Co A lectin failed to sep. either by agarose or by polyacrylamide gel electrophoresis. In the presence of either free or immobilized Con A, agarose gel electrophoresis and polyacrylamide gel electrophoresis could sep. the fluorescent conjugates of the above sugars.

CC 9-7 (Biochemical Methods)
 Section cross-reference(s): 33

L167 ANSWER 23 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 24

ACCESSION NUMBER: 1992:2692 CAPLUS
 DOCUMENT NUMBER: 116:2692
 TITLE: Capillary zone electrophoresis for the quantitation of oligosaccharides formed through the action of chitinase
 AUTHOR(S): Lee, Kyung Bok; Kim, Yeong Shik; Linhardt, Robert J.
 CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
 SOURCE: Electrophoresis (1991), 12(9), 636-40
 CODEN: ELCTDN; ISSN: 0173-0835
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Capillary zone electrophoresis with fluorescence detection was used to analyze the products formed by chitinase acting on N-acetylchitooligosaccharide-fluorescent conjugates. Six oligosaccharides of the structure [N-acetylglucosamine(1→4)]_n (where n = 1-6) were conjugated to 7-amino-1,3-naphthalene disulfonic acid by reductive amination. Each oligosaccharide-fluorescent conjugate was purified by preparative gradient PAGE, semi-dry electrotransfer to a pos.-charged nylon membrane, and recovered by washing the membrane with salt solution. The products formed by treating each oligosaccharide-fluorescent conjugate with chitinase were analyzed by capillary zone electrophoresis. The chitinase treatment hexasaccharide-fluorescent conjugate was also examined kinetically to study the action pattern of this enzyme.

CC 7-3 (Enzymes)

Section cross-reference(s) : 9

L167 ANSWER 24 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 25
 ACCESSION NUMBER: 1992:443130 CAPLUS
 DOCUMENT NUMBER: 117:43130
 TITLE: Detection of chitinase activity using fluorescence-labeled substrate on polyacrylamide gel
 AUTHOR(S): Kim, Yeong Shik; Lee, Kyung Bok;
 Linhardt, Robert J.
 CORPORATE SOURCE: Natl. Prod. Res. Inst., Seoul Natl. Univ., Seoul,
 110-460, S. Korea
 SOURCE: Han'guk Saenghwa Hakhoechi (1991), 24(5), 466-71
 CODEN: KBCJAK; ISSN: 0368-4881
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Gradient PAGE was used to analyze the products formed by chitinases acting on N-acetylchitohexaose-fluorescent conjugates. N-Acetylchitooligosaccharides were conjugated to 7-amino-1,3-naphthalenedisulfonic acid by reductive amination. Each oligosaccharide fluorescent conjugate was purified by preparative gradient PAGE, semi-dry electrotransfer to a pos.-charged nylon membrane, and recovered by washing the membrane with a salt solution. The N-acetylchitohexaose-fluorescent conjugate and chitohexaose were exhaustively treated with 3 kinds of chitinases from *Serratia marcescens*, *Streptomyces griseus*, and green onion (*Allium fistulosum*). The bands were visualized under long-UV light. Anal. of reaction products provided information on the action of chitinases from different sources.

CC 7-1 (Enzymes)

L167 ANSWER 25 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 27
 ACCESSION NUMBER: 1989:88012 CAPLUS
 DOCUMENT NUMBER: 110:88012
 TITLE: Structural features of heparin and their effect on heparin cofactor II mediated inhibition of thrombin
 AUTHOR(S): Kim, Y. S.; Linhardt, R. J.
 CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
 SOURCE: Thrombosis Research (1989), 53(1), 55-71
 CODEN: THBRAA; ISSN: 0049-3848
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Heparins from different species and tissues show similar levels of antithrombin (ATIII) and heparin cofactor II(HCII)-mediated anti-IIa activities. After fractionation, chains containing predominantly ATIII or HCII activities could not be separated. Oligosaccharide mapping demonstrated that the concentration of an oligosaccharide comprising a portion of heparin's ATIII binding site in a particular heparin fraction correlates with the ATIII-mediated anti-IIa activity, but does not correlate with the

HCII-mediated anti-IIa activity. ATIII and HCII may not share a common binding site. Partial enzymic depolarization of heparin resulted in large oligosaccharides which could be purified and partially characterized. Although oligosaccharides of d.p. 18 and 20 showed significant ATIII- and HCII-mediated anti-IIa activities, no separation of these activities resulted. Min. chain length of dp18 was required for HCII-mediated anti-IIa activity.

CC 1-3 (Pharmacology)

L167 ANSWER 26 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 28

ACCESSION NUMBER: 1988:542049 CAPLUS

DOCUMENT NUMBER: 109:142049

TITLE: Homogeneous, structurally defined heparin-oligosaccharides with low anticoagulant activity inhibit the generation of the amplification pathway C3 convertase in vitro

AUTHOR(S): Linhardt, Robert J.; Rice, Kevin G.; Kim, Yeong S.; Engelken, John D.; Weiler, John M.

CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA

SOURCE: Journal of Biological Chemistry (1988), 263(26), 13090-6

CODEN: JBCHA3; ISSN: 0021-9258

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Heparin-oligosaccharides were prepared by partial depolymer. of heparin by using purified flavobacterial heparinase. The resulting oligosaccharide mixture was then fractionated by using strong anion exchange-HPLC to produce individual oligosaccharide components of this mixture, with degree of polymerization ranging 2-16. These heparin-oligosaccharides were examined for both

their anticoagulant activity and capacity to inhibit activation of the amplification pathway of complement. Although there was little difference among com. heparins, a correlation between mol. weight and activity to inhibit convertase generation was clearly established for heparin-oligosaccharides between d.p. 2 through 16. Heparin-oligosaccharides of degree of polymerization 10-16 (Mr 3888-5320) demonstrated up

to 54% of heparin's activity on a molar basis (and up to 163% of heparin's activity on a weight basis) in inhibiting the amplification pathway of complement in vitro while showing almost no anticoagulant activity. Thus heparin-oligosaccharides with low anticoagulant activity have a high capacity to inhibit activation of the amplification pathway of complement in vitro. These studies, for the 1st time, completely sep. heparin's ability to inhibit complement activation from its anticoagulant activity.

CC 1-3 (Pharmacology)

Section cross-reference(s): 13, 15

L167 ANSWER 27 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 29

ACCESSION NUMBER: 1988:586768 CAPLUS

DOCUMENT NUMBER: 109:186768

TITLE: Mapping and quantification of the major oligosaccharide components of heparin

AUTHOR(S): Linhardt, Robert J.; Rice, Kevin G.; Kim, Yeong S.; Lohse, Daniel L.; Wang, Hui M.; Loganathan, Duraikkannu

CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA

SOURCE: Biochemical Journal (1988), 254(3), 781-7

CODEN: BIJOAK; ISSN: 0306-3275

DOCUMENT TYPE: Journal

LANGUAGE: English
 AB A new method of determining the oligosaccharide composition of com. glycosaminoglycan
 heparin is described in which heparin was first depolymerized with heparin lyase (E.C. 4.2.2.7) and then analyzed by a single HPLC step. All 20 of the porcine and bovine heparins examined contained a small number of major oligosaccharide components, which on average comprised 86% of their mass. The 5 most abundant oligosaccharides have defined chemical structures. Although the relative abundance of oligosaccharides varied, the heparins examined were surprisingly similar. Porcine, bovine, low-Mr, and high and low antithrombin III (ATIII)-affinity heparins, however, each had distinctly different proportions of these major oligosaccharide components. The concentration of 1 of these 5 oligosaccharides, containing a portion of the ATIII binding site, correlated with the anticoagulant activity of the ATIII-affinity-fractionated porcine-mucosal heparins from which it was derived. An addnl. oligosaccharide of undetd. structure was found in significant quantities in both bovine heparin and high ATIII-affinity porcine-mucosal heparin. The correlation between oligosaccharide concentration and anticoagulant activity suggests that the oligosaccharide is derived from a structural variant of the ATIII-binding site. Finally, for the heparins examined chondroitin/dermatan sulfate formed 0.6-7.4% of their mass.
 CC 9-15 (Biochemical Methods)
 Section cross-reference(s): 1, 44

L167 ANSWER 28 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 30
 ACCESSION NUMBER: 1988:488599 CAPLUS
 DOCUMENT NUMBER: 109:88599
 TITLE: Microheterogeneity of plasma glycoproteins heparin cofactor II and antithrombin III and their carbohydrate analysis
 AUTHOR(S): Kim, Yeong Shik; Lee, Kyung Bok;
 Linhardt, Robert J.
 CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
 SOURCE: Thrombosis Research (1988), 51(1), 97-104
 CODEN: THBRAA; ISSN: 0049-3848
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Microheterogeneity was demonstrated for heparin cofactor II and antithrombin III. Their carbohydrate compns. were determined
 CC 7-2 (Enzymes)

L167 ANSWER 29 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 31
 ACCESSION NUMBER: 1987:439 CAPLUS
 DOCUMENT NUMBER: 106:439
 TITLE: Structure and activity of a unique heparin-derived hexasaccharide
 AUTHOR(S): Linhardt, Robert J.; Rice, Kevin G.;
 Merchant, Zohar M.; Kim, Yeong S.; Lohse, Daniel L.
 CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
 SOURCE: Journal of Biological Chemistry (1986), 261(31), 14448-54
 CODEN: JBCHA3; ISSN: 0021-9258
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A hexasaccharide representing a major sequence in porcine mucosal heparin has been enzymically prepared from heparin. Its structure was determined by an integrated approach using chemical, enzymic, and spectroscopic methods.

Two-dimensional ^1H homonuclear COSY, C-H correlation NMR, and selective irradiation were used to assign many of the NMR resonances. In addition, new techniques including sulfate determination by ion chromatog. and Fourier transform

IR and californium plasma desorption mass spectroscopy have been applied, resulting in an unambiguous structural assignment of
 $\Delta\text{IdoAp}2S(1\rightarrow4)-\alpha\text{-D-GlcNp}2S6S(1\rightarrow4)-\alpha\text{-L-}$
 $\text{IdoAp}(1\rightarrow4)-\alpha\text{-D-GlcNAcp}6S(1\rightarrow4)-\beta\text{-D-}$
 $\text{GlcAp}(1\rightarrow4)-\alpha\text{-D-GlcNp}2S3S6S$ [105575-57-3] (where ΔIdoA represents 4-deoxy- $\alpha\text{-L-threo-hex-4-enopyranosyluronic acid}$, p represents pyranose, and GlcA and IdoA represent glucuronic and iduronic acid). This hexasaccharide contains a portion of the antithrombin [9000-94-6] III-binding site and has a K_d of $4 + 10^{-5}\text{M}$. Unlike other small heparin oligosaccharides, which are specific for coagulation factor Xa [9002-05-5], it inhibits both factors IIa [9002-04-4] and Xa equally through antithrombin III. This hexasaccharide may have the unique capacity to act primarily through heparin cofactor II [81604-65-1] to inhibit thrombin cofactor IIa) and shows over half of heparin's heparin cofactor II-mediated anti-factor IIa activity. These studies suggest the occurrence of contiguous binding sites on heparin for Xa, antithrombin III, and heparin cofactor II.

CC 1-8 (Pharmacology)

L167 ANSWER 30 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 32

ACCESSION NUMBER: 1986:16733 CAPLUS
 DOCUMENT NUMBER: 104:16733
 TITLE: Evidence of random structural features in the heparin polymer
 AUTHOR(S): Linhardt, Robert J.; Merchant, Zohar M.;
 Rice, K. G.; Kim, Y. S.; Fitzgerald, Gerald L.; Grant, Arthur C.; Langer, Robert
 CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
 SOURCE: Biochemistry (1985), 24(26), 7805-10
 CODEN: BICHAW; ISSN: 0006-2960
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The 1st use of computer-simulation studies to examine the structure of heparin is reported. The product distributions obtained when porcine mucosal heparins were depolymd. with heparinase were compared to computer-simulated distributions. The modeled distribution was relatively unaffected by the polydispersity and mol. weight of heparin. However, the percent of heparinase-cleavable glycosidic linkages and their distribution throughout the polymer resulted in a marked change in the simulated product distribution. The similarity between exptl. observed and computer-simulated product distributions is consistent with the random distribution of heparinase-cleavable sites in porcine mucosal heparin. Finally, a random distribution of N-acetyl residues with respect to heparinase-cleavable sites was exptl. observed

CC 6-4 (General Biochemistry)

Section cross-reference(s): 33

L167 ANSWER 31 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 33

ACCESSION NUMBER: 1985:578553 CAPLUS
 DOCUMENT NUMBER: 103:178553
 TITLE: Structure of heparin-derived tetrasaccharides
 AUTHOR(S): Merchant, Z. M.; Kim, Y. S.; Rice, K. G.; Linhardt, R. J.
 CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
 SOURCE: Biochemical Journal (1985), 229(2), 369-77
 CODEN: BIJOAK; ISSN: 0306-3275

Krishnan 10/786613

02/22/2006

DOCUMENT TYPE: Journal
LANGUAGE: English

AB The structure of heparin was examined by characterizing a disaccharide and five of the more than a dozen tetrasaccharide components obtained by its depolymer. with flavobacterial heparinase. Enzymic depolymer. of porcine mucosal heparin results in a mixture of di-, tetra-, hexa- and higher oligosaccharides. The di- and tetrasaccharide components represent 75mol/100mol of these heparin fragments. Ion-exchange chromatog. indicates the presence of only one disaccharide, $\Delta\text{Idu}2S(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S$ (where Idu is iduronic acid, ΔIdu is 4-deoxy- $\alpha\text{-L-threo-hex-4-enopyranosyluronic acid}$, GlcN is glucosamine, GlcA is glucuronic acid and S is sulfate), but results in the solution of five major and at least seven minor tetrasaccharide components. The structures of the disaccharide and five major tetrasaccharides were determined by chemical, enzymic, electrophoretic, and spectroscopic methods, including ^{13}C , ^1H NMR and fast atom bombardment mass spectrometry. The structure of these five tetrasaccharides are: $\Delta\text{Idu}2S(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S(1\rightarrow4)$ - $\alpha\text{-L-Idu}2S(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S$; $\Delta\text{Idu}2S(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S(1\rightarrow4)$ - $\beta\text{-D-GlcA}(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S$; $\Delta\text{Idu}2S(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S(1\rightarrow4)$ - $\beta\text{-D-GlcA}(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S$; $\Delta\text{Idu}2S(1\rightarrow4)$ - $\alpha\text{-D-GlcNAc}(1\rightarrow4)$ - $\beta\text{-D-GlcA}(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S$; and $\Delta\text{Idu}2S(1\rightarrow4)$ - $\alpha\text{-D-GlcNAc}(1\rightarrow4)$ - $\alpha\text{-L-Idu}(1\rightarrow4)$ - $\alpha\text{-D-GlcNS}6S$. The disaccharide and the five major tetrasaccharides do not possess significant anticoagulant activity.

CC 33-8 (Carbohydrates)

L167 ANSWER 32 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 34
ACCESSION NUMBER: 1985:592544 CAPLUS
DOCUMENT NUMBER: 103:192544
TITLE: High-performance liquid chromatographic separation of heparin-derived oligosaccharides
AUTHOR(S): Rice, K. G.; Kim, Y. S.; Grant, A. C.; Merchant, Z. M.; Linhardt, R. J.
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Analytical Biochemistry (1985), 150(2), 325-31
CODEN: ANBCA2; ISSN: 0003-2697
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Heparin was enzymically depolymerd. with heparin lyase (EC 4.2.2.7)) and then sep. into di-, tetra-, hexa-, octa-, and decasaccharide mixts. by low-pressure gel-permeation chromatog. (GPC). These sized mixts. were resolved by strong anion-exchange (SAX) HPLC into multiple components. The fractions from the SAX-HPLC were collected and characterized for size by GPC-HPLC and sulfate content by ion chromatog. This study provides detailed method for the separation of larger and more highly sulfated oligosaccharides than previously reported. It describes the 1st use of ion chromatog. for the accurate determination of the sulfate content of heparin oligosaccharides, a method which can also be applied to heparin and other glycosaminoglycans.

CC 9-3 (Biochemical Methods)

L167 ANSWER 33 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 35
ACCESSION NUMBER: 1985:404756 CAPLUS
DOCUMENT NUMBER: 103:4756
TITLE: Small heparin fragments regulate the amplification pathway of complement
AUTHOR(S): Sharath, Murali D.; Merchant, Zohar M.; Kim, Yeong S.; Rice, Kevin G.; Linhardt, Robert

CORPORATE SOURCE: J.; Weiler, John M.
 Dep. Intern. Med., Veterans Adm. Med. Cent., Iowa
 City, IA, 52242, USA

SOURCE: Immunopharmacology (1985), 9(2), 73-80
 CODEN: IMMUDP; ISSN: 0162-3109

DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Heparin is a highly sulfated, polydisperse and heterogeneous glycosaminoglycan which has been well characterized for its ability to regulate multiple sites in the complement cascade. Although previous studies demonstrated the relation between degree of sulfation, particularly O-sulfation, and complement-inhibiting capacity, they left unclear the relation between the size of the heparin mol. and its ability to inhibit complement. Therefore, although the structure-activity relation for heparin is well understood for anticoagulant activity, it is ill defined for the complement system. The present studies were designed to examine depolymerized heparin to determine which fragments were capable of inhibiting amplification pathway activation. As the size of the mol. increased, the ability to regulate complement increased; below 1000 daltons the fragments were essentially inactive and above 3500 they had the same activity as com. heparin. Furthermore, the 5 major tetrasaccharides of heparin were analyzed, and the degree of sulfation did correlate with the ability to inhibit complement. These studies have for the 1st time begun to examine the minimal structural requirements for heparin to regulate complement.

CC 15-4 (Immunochemistry)

L167 ANSWER 34 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:1069968 CAPLUS
 DOCUMENT NUMBER: 142:458725
 TITLE: Nucleolin: acharan sulfate-binding protein on the surface of cancer cells
 AUTHOR(S): Joo, Eun Ji; Ten Dam, Gerdy B.; Van Kuppevelt, Toin H.; Toida, Toshihiko; Linhardt, Robert J.; Kim, Yeong Shik
 CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, Seoul, 110-460, S. Korea
 SOURCE: Glycobiology (2004), Volume Date 2005, 15(1), 1-9
 CODEN: GLYCE3; ISSN: 0959-6658
 PUBLISHER: Oxford University Press
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Glycosaminoglycans (GAGs) are complex polysaccharides that participate in the regulation of physiol. processes through the interactions with a wide variety of proteins. Acharan sulfate (AS), isolated from the giant African snail *Achatina fulica*, primarily consists of the repeating disaccharide structure α -D-N-acetylglucosaminyl (1 4) 2-sulfoiduronic acid. Exogenous AS was injected s.c. near the tumor tissue in C57BL/6 mice that had been implanted with Lewis lung carcinoma cells (LLCs). The location of AS in the tumor was assessed by staining of sectioned tissues with alcian blue and periodic acid-Schiff (PAS) reagent. In vitro assays indicated binding of cells to 50 μ g/mL AS (or heparin) after a 5-h incubation. Immunofluorescence assays, using anti-AS antibody, detected AS at the cell surface. The outer-surface of LLCs were next biotinylated to identify the AS-binding proteins. Biotinylated cells were lysed, and the lysates were fractionated on the AS affinity column using a stepwise salt gradient (0, 0.1, 0.3, 0.5, 0.7, 1.0, and 2.0 M). The fractions were analyzed by SDS-PAGE with silver staining and western blotting. We focused on the proteins with high affinity for AS (eluting

at 1 M NaCl) and detected only two bands by western blotting. ESI Q-TOF MS anal. of one of these bands, mol. weight apprx. 110 kDa, showed it to be nucleolin. A phosphorylated form of nucleolin on the surface of cells acts as a cell surface receptor for a variety of ligands, including growth factors (i.e., basic fibroblast growth factor) and chemokines (i.e., midkine). These results show that nucleolin is one of several AS-binding proteins and suggest that AS might demonstrate its tumor growth inhibitory activity by binding the nucleolin receptor protein on the surface of cancer cells.

CC 6-3 (General Biochemistry)
 ST nucleolin **acharan sulfate** protein membrane cancer
 IT Lung, neoplasm
 (carcinoma; purification and characterization of nucleolin, a
 acharan sulfate-binding protein of cell membrane of
 cancer cells)
 IT Proteins
 RL: BSU (Biological study, unclassified); PUR (Purification or recovery);
 BIOL (Biological study); PREP (Preparation)
 (nucleolins; purification and characterization of nucleolin, a
 acharan sulfate-binding protein of cell membrane of
 cancer cells)
 IT Carcinoma
 (pulmonary; purification and characterization of nucleolin, a
 acharan sulfate-binding protein of cell membrane of
 cancer cells)
 IT Cell membrane
 Neoplasm
 (purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)
 IT 192662-57-0, **Acharan sulfate**
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)
 IT 192662-57-0, **Acharan sulfate**
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)
 RN 192662-57-0 CAPLUS
 CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 35 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1998:34040 CAPLUS
 DOCUMENT NUMBER: 128:97878
 TITLE: Glycosaminoglycans can influence fibroblast growth factor-2 mitogenicity without significant growth factor binding. [Erratum to document cited in CA127:117569]
 AUTHOR(S): Wang, Huiming; Toida, Toshihiko; Kim, Yeong Shik; Capila, Ishan; Hileman, Ronald E.; Bernfield, Merton; Linhardt, Robert J.
 CORPORATE SOURCE: Department of Pediatrics, Harvard Medical School, Boston, MA, 02115, USA
 SOURCE: Biochemical and Biophysical Research Communications (1998), 242(1), 248
 CODEN: BBRCA9; ISSN: 0006-291X
 PUBLISHER: Academic Press

DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB On page 372, the legend to Fig. 3 misidentified the square, circle, and open and closed triangles used in the figure; Fig. 3 and its correct legend are given.
 CC 2-5 (Mammalian Hormones)
 IT 9005-49-6, Heparin, biological studies 106096-93-9, Basic fibroblast growth factor 192662-56-9, N-Sulfoacharan sulfate 192662-57-0, Acharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
 (glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding (Erratum))
 IT 192662-56-9, N-Sulfoacharan sulfate 192662-57-0, Acharan sulfate
 RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
 (glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding (Erratum))
 RN 192662-56-9 CAPLUS
 CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L167 ANSWER 36 OF 47 MEDLINE on STN DUPLICATE 3
 ACCESSION NUMBER: 2005009866 MEDLINE
 DOCUMENT NUMBER: PubMed ID: 15329357
 TITLE: Nucleolin: acharan sulfate-binding protein on the surface of cancer cells.
 AUTHOR: Joo Eun Ji; ten Dam Gerdy B; van Kuppevelt Toin H; Toida Toshihiko; Linhardt Robert J; Kim Yeong Shik
 CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, 28 Yeonkun-Dong, Jongno-Ku, Seoul 110-460, Korea.
 SOURCE: Glycobiology, (2005 Jan) 15 (1) 1-9. Electronic Publication: 2004-08-25.
 Journal code: 9104124. ISSN: 0959-6658.
 PUB. COUNTRY: England: United Kingdom
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 200505
 ENTRY DATE: Entered STN: 20050108
 Last Updated on STN: 20050517
 Entered Medline: 20050516
 ABSTRACT:
 Glycosaminoglycans (GAGs) are complex polysaccharides that participate in the regulation of physiological processes through the interactions with a wide variety of proteins. Acharan sulfate (AS), isolated from

Krishnan 10/786613

02/22/2006

the giant African snail *Achatina fulica*, primarily consists of the repeating disaccharide structure alpha-D-N-acetylglucosaminyl (1-->4) 2-sulfoiduronic acid. Exogenous AS was injected subcutaneously near the tumor tissue in C57BL/6 mice that had been implanted with Lewis lung carcinoma cells (LLCs). The location of AS in the tumor was assessed by staining of sectioned tissues with alcian blue and periodic acid-Schiff (PAS) reagent. In vitro assays indicated binding of cells to 50 microg/ml AS (or heparin) after a 5-h incubation. Immunofluorescence assays, using anti-AS antibody, detected AS at the cell surface. The outer-surface of LLCs were next biotinylated to identify the AS-binding proteins. Biotinylated cells were lysed, and the lysates were fractionated on the AS affinity column using a stepwise salt gradient (0, 0.1, 0.3, 0.5, 0.7, 1.0, and 2.0 M). The fractions were analyzed by SDS-PAGE with silver staining and western blotting. We focused on the proteins with high affinity for AS (eluting at 1 M NaCl) and detected only two bands by western blotting. ESI Q-TOF MS analysis of one of these bands, molecular weight approximately 110 kDa, showed it to be nucleolin. A phosphorylated form of nucleolin on the surface of cells acts as a cell surface receptor for a variety of ligands, including growth factors (i.e., basic fibroblast growth factor) and chemokines (i.e., midkine). These results show that nucleolin is one of several AS-binding proteins and suggest that AS might demonstrate its tumor growth inhibitory activity by binding the nucleolin receptor protein on the surface of cancer cells.

CONTROLLED TERM: Amino Acid Sequence

AMINO ACID SE Animals

Animals
Blottin

Blotting, Western Cell Adhesion

Cell Adhesion Cell Line Tum

*Cell Membrane: M

Cell Membrane: ME, metabolism Electrophoresis, Polysaccharides

Electrophoresis, Polyacrylamide Gel Glycogaminoglycans. ME and I.I.

Glycosidases

Human
Mice

Mice

Mice, Inbred C57BL
Male, adult, 200 g

Molecular Sequence Data

*Neoplasms: ME, metabolism

*Neoplasms: PA, pathology

Phosphoproteins: CH, chemistry

Phosphoproteins: IP, isolation

*Phosphoproteins: ME, metabolism

RNA-Binding Proteins: CH, chemistry

RNA-Binding Proteins: IP, isolation

*RNA-Binding Proteins: ME, metabolic

Research Support, Non-U

CHEMICAL NAME: Spectrum Analysis, Mass
0 (Glycosaminoglycans); 0 (Phosphoproteins); 0 (RNA-Binding Proteins); 0 (**acharan sulfate**); 0 (nucleolin)

L167 ANSWER 37 OF 47 MEDLINE on STN DUPLICATE 26
ACCESSION NUMBER: 91297473 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2068567
TITLE: Molecular profile and mapping of dermatan sulfates from

AUTHOR: Linhardt R J; al-Hakim A; Liu S Y; Kim Y different origins.

CORPORATE SOURCE: S; Fareed J
Division of Medicinal and Natural Products Chemistry,
College of Pharmacy, University of Iowa, Iowa City 52242.
CONTRACT NUMBER: SW000000 (REB-1)

CONTRACT NUMBER:
HJ-29787 (NHLB)

SOURCE: Seminars in thrombosis and hemostasis (1991) 17, 2, 3

15-22.
 Journal code: 0431155. ISSN: 0094-6176.

PUB. COUNTRY: United States
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 199108
 ENTRY DATE: Entered STN: 19910901
 Last Updated on STN: 19910901
 Entered Medline: 19910809

ABSTRACT:

A method for characterization and molecular profiling of acidic polysaccharides (such as dermatan sulfates) has been developed. A variety of dermatan sulfates, fractionated dermatan sulfates and low molecular weight dermatan sulfates, were examined. First, bacterial lyase-type enzymes (chondroitinase ABC) were used to depolymerize the polysaccharides. Then, mapping of these oligosaccharides (comparable to peptide mapping of proteins) was performed using gradient PAGE and SAX-HPLC. Bands and peaks observed in these maps were identified using oligosaccharide standards of defined chemical structures and physical properties. The resulting map can be used to point to structural differences among these dermatan sulfates regarding their size, charge, degree of sulfation, and contamination. Fine details of fragmentation patterns and absence or presence of contaminants were detected by silver staining of gels. These differences, particularly the content of----4)alpha-IdoA(1----3)-beta-D-GalNAc4S6S(1----sequences (detected using SAX-HPLC as delta UA(1----3)-beta-D-GalNAc4S6S) may play an important role influencing the activity of dermatan sulfates to potentiate HC II inhibition of Factor IIa.

CONTROLLED TERM: Check Tags: Comparative Study

- Animals
- Carbohydrate Sequence
- Cattle
- Chromatography, Gel
- Chromatography, High Pressure Liquid
- *Dermatan Sulfate: CH, chemistry
- Dermatan Sulfate: IP, isolation & purification
- Electrophoresis, Polyacrylamide Gel
- Intestines: CH, chemistry
- Molecular Sequence Data
- Mucous Membrane: CH, chemistry
- Research Support, Non-U.S. Gov't
- Research Support, U.S. Gov't, P.H.S.
- Skin: CH, chemistry
- Swine

CAS REGISTRY NO.: 24967-94-0 (Dermatan Sulfate)

L167 ANSWER 38 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 1999:258319 BIOSIS
 DOCUMENT NUMBER: PREV199900258319
 TITLE: Heparin, chemically modified heparins, and Acharan sulfate differentially regulate complement activity.

AUTHOR(S): Edens, R. Erik [Reprint author]; Kim, Yeong S.; Wu, Song J.; Linhardt, Robert J.; Caldwell, Elizabeth B.; Weiler, John M.

CORPORATE SOURCE: Pediatrics, University of Iowa, Iowa City, IA, USA
 SOURCE: Pediatric Research, (April, 1999) Vol. 45, No. 4 PART 2, pp. 22A. print.
 Meeting Info.: Annual Meeting of the American Pediatric Society and the Society for Pediatric Research. San

Krishnan 10/786613

02/22/2006

DOCUMENT TYPE: Francisco, California, USA. May 1-4, 1999.
CODEN: PEREBL. ISSN: 0031-3998.
Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
Conference; (Meeting Poster)

LANGUAGE: English

ENTRY DATE: Entered STN: 2 Jul 1999
Last Updated on STN: 2 Jul 1999

CONCEPT CODE: Pharmacology - Immunological processes and allergy 22018
Metabolism - Carbohydrates 13004
Metabolism - Proteins, peptides and amino acids 13012
Immunology - Immunopathology, tissue immunology 34508
Pharmacology - Drug metabolism and metabolic stimulators 22003
General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Carbohydrates 10068
Biophysics - Molecular properties and macromolecules 10506

INDEX TERMS: Major Concepts
 Immune System (Chemical Coordination and Homeostasis);
 Pharmacology

INDEX TERMS: Chemicals & Biochemicals
 acharan sulfate: immunologic-drug,
 complement activity regulator; chemically modified
 heparin: immunologic-drug, complement activity
 regulator; heparin: immunologic-drug, complement
 activity regulator

INDEX TERMS: Miscellaneous Descriptors
 Meeting Abstract; Meeting Poster

ORGANISM: Classifier
 Animalia 33000
Super Taxa
 Animalia
Organism Name
 animal: animal model
Taxa Notes
 Animals

REGISTRY NUMBER: 192662-57-0 (**acharan sulfate**)
9005-49-6 (heparin)

L167 ANSWER 39 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on
STN

ACCESSION NUMBER: 1997:420074 BIOSIS
DOCUMENT NUMBER: PREV199799719277
TITLE: **Acharan sulfate and acharan sulfate-derived new oligosaccharides.**
AUTHOR(S): Kim, Yeong Shik [Reprint author]; Ahn, Mi Young
[Reprint author]; Shin, Kuk Hyun [Reprint author]; Woo,
Song Ji [Reprint author]; Chun, Moon Woo; Kim, Dong-Hyun;
Toida, Toshihiko; Linhardt, Robert J.
CORPORATE SOURCE: Natural Prod. Res. Inst., Seoul Natl. Univ., Seoul, South Korea
SOURCE: FASEB Journal, (1997) Vol. 11, No. 9, pp. A995.
Meeting Info.: 17th International Congress of Biochemistry and Molecular Biology in conjunction with the Annual Meeting of the American Society for Biochemistry and Molecular Biology. San Francisco, California, USA. August

24-29, 1997.
 DOCUMENT TYPE: CODEN: FAJOEC. ISSN: 0892-6638.
 Conference; (Meeting)
 Conference; Abstract; (Meeting Abstract)

LANGUAGE: English
 ENTRY DATE: Entered STN: 8 Oct 1997
 Last Updated on STN: 21 Nov 1997

CONCEPT CODE: General biology - Symposia, transactions and proceedings
 00520
 Biochemistry studies - Carbohydrates 10068
 Biophysics - Methods and techniques 10504

INDEX TERMS: Major Concepts
 Biochemistry and Molecular Biophysics; Methods and Techniques

INDEX TERMS: Chemicals & Biochemicals
ACHARAN SULFATE

INDEX TERMS: Miscellaneous Descriptors
ACHARAN SULFATE;
 ALPHA-D-N-ACETYLGLUCOSAMINYL 2-SULFO-IDURONIC ACID;
 ANALYTICAL METHOD; BIOCHEMISTRY AND BIOPHYSICS; GIANT
 AFRICAN SNAIL; GLYCOSAMINOGLYCAN; HIGH PERFORMANCE
 LIQUID CHROMATOGRAPHY; NMR SPECTROSCOPY

ORGANISM: Classifier
 Gastropoda 61200
 Super Taxa
 Mollusca; Invertebrata; Animalia
 Organism Name
 Achatina fulica
 Taxa Notes
 Animals, Invertebrates, Mollusks

REGISTRY NUMBER: 192662-57-0 (ACHARAN SULFATE)

L167 ANSWER 40 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on
 STN

ACCESSION NUMBER: 1988:368228 BIOSIS
 DOCUMENT NUMBER: PREV198835052841; BR35:52841
 TITLE: FUNDAMENTAL OLIGOSACCHARIDES DERIVED FROM HEPARIN AND THEIR
 CORRELATION TO ANTICOAGULANT ACTIVITY.

AUTHOR(S): LINHARDT R J [Reprint author]; RICE K G; KIM
 Y S; LOHSE D L; WANG H M; LOGANATHAN D

CORPORATE SOURCE: DIV MED AND NATURAL PRODUCTS CHEM, COLL PHARMACY, UNIV
 IOWA, IOWA CITY, IOWA 52242, USA

SOURCE: Abstracts of Papers Chemical Congress of North America,
 (1988) Vol. 3, No. 1, pp. CARB 100.
 Meeting Info.: THIRD CHEMICAL CONGRESS OF NORTH AMERICA
 HELD AT THE 195TH AMERICAN CHEMICAL SOCIETY MEETING,
 TORONTO, ONTARIO, CANADA, JUNE 5-10, 1988. ABSTR PAP CHEM
 CONGR NORTH AM.

DOCUMENT TYPE: Conference; (Meeting)
 FILE SEGMENT: BR
 LANGUAGE: ENGLISH
 ENTRY DATE: Entered STN: 9 Aug 1988
 Last Updated on STN: 9 Aug 1988

CONCEPT CODE: General biology - Symposia, transactions and proceedings
 00520
 Biochemistry studies - Carbohydrates 10068
 Pharmacology - Blood and hematopoietic agents 22008

INDEX TERMS: Major Concepts
 Biochemistry and Molecular Biophysics; Pharmacology

INDEX TERMS: Miscellaneous Descriptors

Krishnan 10/786613

02/22/2006

ABSTRACT

REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 41 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on
STN

ACCESSION NUMBER: 1987:246464 BIOSIS
DOCUMENT NUMBER: PREV198732121722; BR32:121722
TITLE: GRADIENT PAGE AND STRONG ANION EXCHANGE SAX HPLC AS
ANALYTICAL TOOLS FOR SEQUENCING THE HEPARIN POLYMER.
AUTHOR(S): RICE K G [Reprint author]; KIM Y S; LOHSE D L;
LINHARDT R J
CORPORATE SOURCE: DIV MEDICINAL NAT PROD CHEM, COLL PHARMACY, UNIV IOWA, IOWA
CITY, IA 52242, USA
SOURCE: Abstracts of Papers American Chemical Society, (1987) Vol.
193.
Meeting Info.: 193RD AMERICAN CHEMICAL SOCIETY NATIONAL
MEETING, DENVER, COLORADO, USA, APRIL 5-10, 1987. ABSTR PAP
AM CHEM SOC.
CODEN: ACSRAL. ISSN: 0065-7727.
Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 26 May 1987
Last Updated on STN: 26 May 1987
CONCEPT CODE: General biology - Symposia, transactions and proceedings
00520
Biochemistry methods - Carbohydrates 10058
Biochemistry studies - Carbohydrates 10068
Biophysics - Methods and techniques 10504
Biophysics - Molecular properties and macromolecules
10506
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics
INDEX TERMS: Miscellaneous Descriptors
ABSTRACT POLYACRYLAMIDE GEL ELECTROPHORESIS HIGH
PERFORMANCE LIQUID CHROMATOGRAPHY
REGISTRY NUMBER: 9005-49-6 (HEPARIN)
9003-05-8 (POLYACRYLAMIDE)

L167 ANSWER 42 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on
STN

ACCESSION NUMBER: 1985:133146 BIOSIS
DOCUMENT NUMBER: PREV198529023142; BR29:23142
TITLE: SMALL HEPARIN FRAGMENTS INHIBIT COMPLEMENT ACTIVATION.
AUTHOR(S): LINHARDT R J [Reprint author]; SHARATH M D;
MERCHANT Z M; KIM Y S; RICE K G; WEILER J M
CORPORATE SOURCE: DIV MEDICINAL CHEMISTRY, COLLEGE OF PHARMACY, UNIVERSITY OF
IOWA, IOWA CITY, IOWA 52242, USA
SOURCE: Federation Proceedings, (1985) Vol. 44, No. 4, pp. 989.
Meeting Info.: 69TH ANNUAL MEETING OF THE FEDERATION OF
AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, ANAHEIM,
CALIF., USA, APR. 21-26, 1985. FED PROC.
CODEN: FEPRA7. ISSN: 0014-9446.
Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
CONCEPT CODE: General biology - Symposia, transactions and proceedings
00520
Biochemistry studies - Proteins, peptides and amino acids
10064

Biochemistry studies - Carbohydrates 10068
 Biophysics - Molecular properties and macromolecules 10506
 Enzymes - Physiological studies 10808
 Metabolism - Proteins, peptides and amino acids 13012
 Blood - Blood and lymph studies 15002
 Immunology - General and methods 34502
 Immunology - Immunopathology, tissue immunology 34508

INDEX TERMS:

Major Concepts
 Biochemistry and Molecular Biophysics; Blood and Lymphatics (Transport and Circulation); Enzymology (Biochemistry and Molecular Biophysics); Immune System (Chemical Coordination and Homeostasis); Metabolism

INDEX TERMS:

Miscellaneous Descriptors
 ABSTRACT ALTERNATIVE PATHWAY CONVERTASE GENERATION

REGISTRY NUMBER:

9005-49-6 (HEPARIN)

L167 ANSWER 43 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 1986:46797 BIOSIS

DOCUMENT NUMBER: PREV198630046797; BR30:46797

TITLE: VERY LOW MOLECULAR WEIGHT HEPARIN FRAGMENT INHIBITION OF COMPLEMENT ACTIVATION.

AUTHOR(S): LINHARDT R J [Reprint author]; KIM Y S;

MERCHANT Z M; RICE G H; WEILER J M

CORPORATE SOURCE: DEP MED CHEM NATURAL PRODUCTS, COLLEGE PHARMACY, UNIV IOWA, IOWA CITY, IOWA, USA

SOURCE: Complement, (1985) Vol. 2, No. 1, pp. 49.

Meeting Info.: 11TH INTERNATIONAL COMPLEMENT WORKSHOP, MIAMI, FLA., USA, NOV. 3-5, 1985. COMPLEMENT.

CODEN: CMPLDF. ISSN: 0253-5076.

DOCUMENT TYPE: Conference; (Meeting)

FILE SEGMENT: BR

LANGUAGE: ENGLISH

ENTRY DATE: Entered STN: 25 Apr 1986

Last Updated on STN: 25 Apr 1986

CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520

Biochemistry studies - Proteins, peptides and amino acids 10064

Biochemistry studies - Carbohydrates 10068

Biophysics - Molecular properties and macromolecules 10506

Blood - Blood and lymph studies 15002

Immunology - Immunopathology, tissue immunology 34508

INDEX TERMS: Major Concepts

Blood and Lymphatics (Transport and Circulation); Immune System (Chemical Coordination and Homeostasis)

INDEX TERMS: Miscellaneous Descriptors

ABSTRACT

REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 44 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 1986:79732 BIOSIS

DOCUMENT NUMBER: PREV198630079732; BR30:79732

TITLE: BIOLOGICAL ACTIVITY OF VERY LOW MOLECULAR WEIGHT HEPARIN OLIGOSACCHARIDES.

AUTHOR(S): MERCHANT Z M [Reprint author]; KIM Y S; RICE K G; LOHSE D L; LINHARDT R J

Krishnan 10/786613

02/22/2006

CORPORATE SOURCE: DIV MEDICINAL CHEM NAT PRODUCTS, COLL PHARMACY, UNIV IOWA,
IOWA CITY, IA 52242, USA
SOURCE: Abstracts of Papers American Chemical Society, (1985) Vol.
190.
Meeting Info.: 190TH AMERICAN CHEMICAL SOCIETY NATIONAL
MEETING, CHICAGO, ILL., USA, SEPT. 8-13, 1985. ABSTR PAP AM
CHEM SOC.
CODEN: ACSRAL. ISSN: 0065-7727.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 25 Apr 1986
Last Updated on STN: 25 Apr 1986
CONCEPT CODE: General biology - Symposia, transactions and proceedings
00520
Biochemistry studies - Proteins, peptides and amino acids
10064
Biochemistry studies - Carbohydrates 10068
Biophysics - Molecular properties and macromolecules
10506
Cardiovascular system - Blood vessel pathology 14508
Blood - Blood and lymph studies 15002
Endocrine - General 17002
Pharmacology - Blood and hematopoietic agents 22008
Pharmacology - Cardiovascular system 22010
INDEX TERMS: Major Concepts
Blood and Lymphatics (Transport and Circulation);
Cardiovascular System (Transport and Circulation);
Endocrine System (Chemical Coordination and
Homeostasis); Pharmacology
INDEX TERMS: Miscellaneous Descriptors
ABSTRACT ANTICOAGULANT-DRUG ANTIATHEROSCLEROTIC
COMPLEMENT INHIBITION
REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 45 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on
STN
ACCESSION NUMBER: 1986:79762 BIOSIS
DOCUMENT NUMBER: PREV198630079762; BR30:79762
TITLE: ISOLATION AND CHARACTERIZATION OF LOW MOLECULAR WEIGHT
HEPARIN DERIVED OLIGOSACCHARIDES.
AUTHOR(S): MERCHANT Z M [Reprint author]; KIM Y S; RICE K G;
LOHSE D L; LINHARDT R J
CORPORATE SOURCE: DIV MED CHEM NAT PRODUCTS, COLL PHARMACY, UNIV IOWA, IOWA
CITY, IA 52242, USA
SOURCE: Abstracts of Papers American Chemical Society, (1985) Vol.
190.
Meeting Info.: 190TH AMERICAN CHEMICAL SOCIETY NATIONAL
MEETING, CHICAGO, ILL., USA, SEPT. 8-13, 1985. ABSTR PAP AM
CHEM SOC.
CODEN: ACSRAL. ISSN: 0065-7727.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 25 Apr 1986
Last Updated on STN: 25 Apr 1986
CONCEPT CODE: General biology - Symposia, transactions and proceedings
00520
Biochemistry methods - Carbohydrates 10058
Biochemistry studies - Carbohydrates 10068

Biophysics - Molecular properties and macromolecules 10506
 Cardiovascular system - Blood vessel pathology 14508
 Blood - Blood, lymphatic and reticuloendothelial pathologies 15006
 Pharmacology - Blood and hematopoietic agents 22008
 Pharmacology - Cardiovascular system 22010

INDEX TERMS:

Major Concepts
 Biochemistry and Molecular Biophysics; Blood and Lymphatics (Transport and Circulation); Cardiovascular System (Transport and Circulation); Pharmacology

INDEX TERMS:

Miscellaneous Descriptors
 ABSTRACT ANTICOAGULANT-DRUG ANTITHROMBOTIC STRUCTURE ACTIVITY RELATIONSHIP

REGISTRY NUMBER:

9005-49-6 (HEPARIN)

L167 ANSWER 46 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER:

1985:87569 BIOSIS

DOCUMENT NUMBER:

PREV198528087569; BR28:87569

TITLE:

ENZYMATIC PREPARATION OF ANTICOAGULANTS FROM HEPARIN.

AUTHOR(S):

LINHARDT R J [Reprint author]; MERCHANT Z M;
 KIM Y S; RICE K G

CORPORATE SOURCE:

DIV MED CHEM, UNIV IOWA COLL PHARMACY, IOWA CITY, IOWA 52242, USA

SOURCE:

Abstracts of Papers American Chemical Society, (1984) Vol. 188.

Meeting Info.: 188TH AMERICAN CHEMICAL SOCIETY MEETING, PHILADELPHIA, PA., USA, AUG. 26-31, 1984. ABSTR PAP AM CHEM SOC.

CODEN: ACSRAL. ISSN: 0065-7727.

Conference; (Meeting)

BR

ENGLISH

CONCEPT CODE:

General biology - Symposia, transactions and proceedings 00520

Comparative biochemistry 10010

Biochemistry methods - Carbohydrates 10058

Biochemistry studies - Proteins, peptides and amino acids 10064

Biochemistry studies - Carbohydrates 10068

Biophysics - Molecular properties and macromolecules 10506

Enzymes - Methods 10804

Enzymes - Chemical and physical 10806

Pathology - Therapy 12512

Metabolism - Carbohydrates 13004

Pharmacology - Drug metabolism and metabolic stimulators 22003

Pharmacology - Clinical pharmacology 22005

Pharmacology - Blood and hematopoietic agents 22008

Microbiological apparatus, methods and media 32000

Food microbiology - Biosynthesis, bioassay and fermentation 39007

Major Concepts

Biochemistry and Molecular Biophysics; Enzymology (Biochemistry and Molecular Biophysics); Pharmacology

INDEX TERMS:

Miscellaneous Descriptors

ABSTRACT MICROBE PHARMACOKINETICS BIOTECHNOLOGY

REGISTRY NUMBER:

9005-49-6 (HEPARIN)

L167 ANSWER 47 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2005:87847 USPATFULL
 TITLE: Antitumor inhibitors and use thereof
 INVENTOR(S): Linhardt, Robert J., Albany, NY, UNITED STATES
 Kim, Yeong Shik, Seoul, KOREA, REPUBLIC OF

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005075312	A1	20050407
APPLICATION INFO.:	US 2004-786613	A1	20040223 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2003-449661P	20030224 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	Schwegman, Lundberg, Woessner & Kluth, P.A., P.O. Box 2938, Minneapolis, MN, 55402	
NUMBER OF CLAIMS:	21	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	6 Drawing Page(s)	
LINE COUNT:	660	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides pharmaceutical compositions for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor**, and methods for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor**.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

TI Antitumor inhibitors and use thereof
 IN Linhardt, Robert J., Albany, NY, UNITED STATES
 IN Kim, Yeong Shik, Seoul, KOREA, REPUBLIC OF

AB The present invention provides pharmaceutical compositions for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor**, and methods for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor**.

SUMM [0003] **Angiogenesis**, or neovascularization, is the formation of new capillaries from preexisting blood vessels and is a fundamental process involved in a . . . of physiological (Folkman, 1971; Folkman, 1972; Folkman and Shing, 1992) and pathophysiological processes (Folkman, 1995; Carmeliet and Jain, 2000). In **cancer**, this process contributes to the progressive growth and metastasis of solid **tumors**. (Liotta et al., 1991).

SUMM [0004] **Tumor angiogenesis** is regulated by the production of **angiogenic** stimulators including members of fibroblast growth factor (FGF) and vascular endothelial growth factor (VEGF) families (Colville-Nash and Willoughby, 1997; Kim et al., 1993). Drugs that interfere with **angiogenesis**, by halting the action of **angiogenic** proteins, might reduce the size of **tumors** and maintain them in a dormant state. **Angiogenic** inhibitors such as angiostatin and endostatin can modulate **angiogenesis** both at the primary site and at the downstream sites of metastasis (O'Reilly et al, 1994, 1997). The potential use of

- these and other natural and synthetic angiogenesis inhibitors is currently being studied intensively by many laboratories (Mohan et al., 2000; Suh et al., 1997; Minamiguchi et al., [0005] Heparin/heparan sulfate interacts with various angiogenic growth factors (Capila and Linhardt, 2002). Angiogenic growth factors induce response in target endothelial cells by binding to cognate cell-surface tyrosine kinase receptors (Gale and Yancopoulos, 1999). The interaction of heparin-binding growth factors to tyrosine kinase receptors is modulated by heparan sulfate proteoglycans. Acharan sulfate (AS) isolated from the giant African snail, Achatina fulica, is a novel member of glycosaminoglycan (GAG) family (Kim et al., HPLC-GPC analysis. Recently, we observed that AS interfered with heparin's bFGF mitogenicity in vitro, suggesting its possible utility as an angiogenesis inhibitor (Wang et al., 1997).
- SUMM [0006] U.S. Pat. No. 6,028,061 describes and claims the use of AS in inhibiting angiogenesis based on its inhibition of FGF (fibroblast growth hormone). We have now discovered that AS has antitumor activity as demonstrated in both in vivo and in vitro assays. The in vivo antitumor activity is demonstrated against the sarcoma 180-induced solid tumor and primary tumor in LLC-bearing C57BL/6 mice. This is the first demonstration of in vivo antitumor activity using AS ever observed. Although more than 30 years ago it was hypothesized that tumor growth is angiogenesis dependent (Folkman, 1971) anti-angiogenesis activity does not predict in vivo tumor growth inhibition. Thus, the present invention provides a marked advance in the elucidation of useful in vivo anti-tumor agents.
- SUMM [0007] The present invention provides pharmaceutical compositions for the treatment of cancer and for inhibiting an increase in the volume or mass of a tumor in a host in need of treatment. The present invention also provides methods for the treatment of cancer and for the inhibition of an increase in the volume or mass of a tumor in a host in need of treatment. Compounds which are the active ingredients of the compositions and methods of the.
- SUMM [0009] The present invention is based on the discovery that acharan sulfate demonstrates in vivo anti-tumor activity. Thus, a novel method of inhibiting tumor growth and treating cancer is provided by the present invention. As used herein acharan sulfate means a glycosaminoglycan from the giant African snail, Achatina fulica having primarily the repeating disaccharide structure of α -D-N-acetylglucosaminyl 2-sulfoiduronic acid. . . .
- DRWD [0010] FIG. 1 depicts the structure of acharan sulfate. And the site of its structure where it can be cleaved using heparin lyase II.
- DRWD [0011] FIG. 2 is a photograph of a control egg and one treated with acharan sulfate showing the effect of acharan sulfate on inhibition of angiogenesis.
- DRWD [0012] FIG. 3 shows the effect of acharan sulfate on bFGF-induced angiogenesis in mouse model.
- DRWD [0013] FIG. 4 shows the effect of acharan sulfate on calf pulmonary endothelial cell proliferation by MTT assay.
- DRWD [0014] FIG. 5 shows the effect of acharan sulfate on tumor volume in Lewis lung carcinoma-bearing mice.
- DRWD [0015] FIG. 6 shows the effect of acharan sulfate on tumor weight in Lewis lung carcinoma-bearing mice.
- DRWD [0016] FIG. 7 shows effects of acharan sulfate on

- DRWD tumor volume (A) and tumor weight (B) in sarcoma 180-bearing mice.
[0017] FIG. 8 shows effect of acharan sulfate on survival time of mice sarcoma with 180 ascitic tumor
- DETD [0018] Acharan sulfate is a glucosaminoglycan having a repeating disaccharide structure described as $\rightarrow 4)$ - α -D-GlcNpAc(1 \rightarrow 4)- α -L-IdoAp2S(1 \rightarrow , where GlcNpAc is 2-acetamido 2-deoxyglucopyranose, IdoAp is idopyranosyluronic acid.
- DETD . . . embodiment of the present invention is the use of and compositions comprising compounds of Formula I for the treatment of cancer or for inhibiting an increase in the mass or volume of a tumor in a patient in need of treatment wherein n is 4 to 100 and more preferably 4 to 50. The pharmaceutical compositions of the present invention are useful in the treatment of cancer and in the inhibition of an increase in the volume or mass of a tumor in a patient in need of treatment. The use of the compounds of Formula I is directed to a method of treating cancer and of inhibiting an increase in the mass or volume of a tumor in a patient in need of treatment.
- DETD [0022] Described herein are experiments carried out to evaluate the antiangiogenic activity of acharan sulfate. We also show herein that acharan sulfate inhibits new blood vessel formation in the in vivo matrigel and chorioallantoic membrane assays. Additionally, we show that acharan sulfate has substantial antitumor activity against sarcoma 180-induced solid and primary tumors in Lewis lung carcinoma-bearing C57BL/6 mice.
- DETD Preparation of Acharan Sulfate
- DETD [0023] Acharan sulfate was isolated from the soft body tissue of the giant African snail by proteolysis of defatted tissue and purified by . . .
- DETD Characterization of Acharan Sulfate
- DETD [0025] The invention provides compositions and methods that can be used to treat cancer utilizing the compounds of Formula I. These compounds are shown herein to inhibit a gain in mass or volume of a tumor. Accordingly, these compounds may be administered to an animal in need of such treatment, including warm blooded animals, such as. . . art. Furthermore, these compounds may be formulated as pharmaceutical dosage forms containing an effective amount of the compound to inhibit tumors from gaining mass or volume. In addition, the compounds of the invention can be formulated as single unit dosage forms. . .
- DETD . . . effective dosage of a compound of Formulae I for inhibition of an increase in the volume or mass of a tumor or as an anticancer agent is extrapolated from the results of the in vivo studies set forth herein. The effective dosage is dependent not. . .
- DETD [0038] Lewis lung carcinoma cells (American Type Cell Collection, Rockville, Md.) were maintained in DMEM supplemented with heat-inactivated 10% FBS (Life Technologies, Grand Island, N.Y.), 100 units/ml penicillin, and 100 μ g/ml streptomycin. Calf pulmonary arterial endothelial (CPAE) cells and sarcoma 180 (Korea Cell Line Bank, Seoul, Korea) were cultured in RPMI 1640 media containing 10% FBS and 1% antibiotics in. . .
- DETD [0039] The effect of acharan sulfate on the inhibition of angiogenesis was performed using the chorioallantoic membrane (CAM) assay. These assays essentially followed previously published procedures (Tanaka et al, 1986; Oikawa. . . half days later, sample-loaded thermanox coverslips (Nunc, Naperville, Ill.)

were air-dried and applied to the CAM surface for testing of angiogenesis inhibition by AS. Two days later, 1 ml of 10% fat emulsion (Intralipose) was injected into the chorioallantoic membrane and the avascular zone was observed under a dissecting microscope. Inhibition of angiogenesis was assessed when the avascular zone exceeded 3 mm. In order to abolish the possibility of contaminant in AS, the depolymerized product by heparinase II as described above was also tested for the antiangiogenic activity. The concentration of AS used in this assay was selected based on the concentration of heparin that had previously. . .

DETD . . . AS on the treated CAM is shown in FIG. 2 and Table 1.

TABLE 1

Effect of AS on chick embryonic angiogenesis

Compounds	Concen- tration (μ g/egg)	Eggs showing antiangio- genesis.sup.a	Total eggs tested	% inhibition
Control (H.sub.2O)	--	3	54	5.6
Retinoic acid.sup.b	1	20	25	80.0
Acharan sulfate	50	2	40	
	5.0			
depolymerization mixture				
Acharan sulfate I	5	14	29	
	48.3			
Acharan sulfate II	10	15	27	
	55.6			

.sup.aAntiangiogenesis was assessed when the avascular zone exceeded 3 mm.

.sup.bRetinoic acid was used as a positive control.

DETD [0042] Compared to the effect of vehicle as control, which did not have antiangiogenic activity in the treated CAM, AS at doses of 5 and 10 μ g/pellet showed antiangiogenic activity of 48.3 and 55.6%, respectively. The effect of AS on chick embryonic angiogenesis decreased in a dose-dependent fashion. Retinoic acid strongly inhibited angiogenesis (80%) even at 1 μ g/egg, but it may have a toxic effect to cells. The depolymerization mixture of AS by heparin lyase II did not cause any inhibition of angiogenesis, indicating that any contaminant in the intact AS could not act as an angiogenic inhibitor.

DETD [0043] The effect of acharan sulfate on the inhibition of angiogenesis was also evaluated in the matrigel plug assay. This assay was performed as previously described (Passaniti et al., 1992). Acharan sulfate, dissolved in water, bFGF and heparin, dissolved in 0.1% bovine serum albumen (BSA)/phosphate buffered saline (PBS) were mixed with liquid. . .

DETD [0044] To evaluate the effect of AS on ongoing angiogenic process in the mouse matrigel plug assay matrigel, heparin (10 units/500 μ l), and bFGF (100 ng/500 μ l) with or without . . . blood cells, indicating the formation of a functional vasculature inside the matrigel and blood circulation in newly formed vessels by angiogenesis induced by bFGF and heparin. Fifty micrograms of AS in combination with bFGF and heparin slightly prevented the vessel induction, indicating that AS suppressed the bFGF-stimulated angiogenesis. We next measured the hemoglobin content inside the matrigel plugs to quantify the angiogenesis. Whereas bFGF and heparin increased Hb concentration to 11.8 g/dl and the Hb concentration inside the control

was 0.3 g/dl, . . . (FIG. 3). Each value represents mean \pm S.E.M. of at least 5 animals. The data are significantly different from the control; **P<0.01 Anti-angiogenesis in this assay did not result from the effect of a vehicle of bFGF and the injection sites showed no signs of inflammation and hemorrhage. Anti-angiogenesis in this assay did not result from the effect of a vehicle of bFGF and the injection sites showed no. . .

DETD [0045] The effect of acharan sulfate on in vitro cell proliferation was carried out using calf pulmonary artery endothelial (CPAE) cells as follows.

DETD [0048] The effect of AS in vivo on tumor growth was evaluated as follows.

DETD [0049] Male C57BL/6 mice were inoculated s.c. in the back with LLC cells (1+10.sup.6/animal) on day 0. After tumor volume was at least 60-100 mm.sup.3, AS was administered into the subcutaneous region near the tumor mass at two doses of 10 and 30 mg/kg for 15 days. The size of tumors in all groups was measured using a dial-caliper and the volume of tumors was determined using the formula width.sup.2+length+0.52 (Voest et al., 1995; Cao et al., 1995). The effects of AS on tumor growth and host survival were also measured by evaluating tumor volumes, tumor weights and percentage increase in lifespan of tumor hosts, respectively (Oguchi et al., 1987; Kusumoto, 1991). For calculating the survival time, mice were inoculated i.p. with 106 sarcoma 180 cells/mouse on day 0 and the treatment with two doses of AS (50 and 100 mg/kg, i.p.) were started. . . days. The control group was treated with saline. Median survival time (MST) for each group (n=7) was observed and the antitumor activity of the test compounds were compared with that of control group by measuring the increase in lifespan.

DETD [0050] For solid tumor development, ICR mice were injected with 0.1 ml of sarcoma 180 suspensions into the right hind limbs. After 6 days of tumor transplantation, mice randomized into six groups were injected i.p. with AS (50 and 100 mg/kg) and 5-FU (25 mg/kg) once a day for 9 days. Eight days later after treatment, animals were sacrificed by cervical dissociation, and solid tumors were removed and weighed.

DETD [0051] The results of AS on tumor growth in C57BL/6 mice inoculated with Lewis lung carcinoma cells are shown in FIGS. 5 and 6. A daily subcutaneous injection of 10 and 30 mg/kg suppressed the growth of primary tumors during the 15-day treatment course. At the end of treatment, tumor growth was inhibited by 32.8% (3049.2 mm.sup.3) and 38.1% (2809.3 mm.sup.3), respectively at a dose of 10 mg/kg and 30 mg/kg, as compared to control mice treated with saline alone (4534.4 mm.sup.3). In contrast, tumor grew rapidly to sizes >4000 mm.sup.3 in saline-treated mice during the same 15-day treatment period. Doxorubicin as positive control was administered i.v. every five day at a dose of 10 mg/kg. It inhibited tumor growth by 62.0% (1721.6 mm.sup.3). The AS-treated mice did not lose weight over the course of treatment, indicating that AS showed little or no toxicity. On day 21, tumor tissues were removed and weighed. It was found that the tumor weight was reduced dose-dependently by the injection of AS as shown in FIG. 6. A mean tumor weight reductions by 37.8% (2.8 \pm 0.2 g) at 10 mg/kg and by 48.9% (2.3 \pm 0.2 g) at 30 mg/kg were observed, compared with the saline group (4.5 \pm 0.7 g). Doxorubicin significantly reduced the tumor weight by 68.0% (1.6 \pm 0.2 g). However, the loss of weight in the group of the doxorubicin-treated mice was marked as. . .

DETD [0052] The results of the effect of AS on solid tumor induced by sarcoma 180 tumor cells in ICR are shown in FIG.

7. As shown in FIG. 7A, the average **tumor** volume in the control was 8804 ± 465.3 mm.^{sup.3}. The level of the **tumor** volume in groups treated with 5-FU injection decreased by 82.1% (1572 ± 201.5 mm.^{sup.3}), compared with the control level. AS at the dose of 50 mg/kg inhibited the **tumor** volume by 45.0% (4799 ± 345.2 mm.^{sup.3}). AS at the dose of 50 mg/kg inhibited the **tumor** weight by 39.6% (4.3 ± 0.1 g), while 5-FU at the dose of 25 mg/kg inhibited the **tumor** weight by 75.1% (1.8 ± 0.3 g) and 55.8% (3.1 ± 0.3 g), compared with the control (7.1 ± 0.1 g) (FIG. 7B). The data were. . .

- DETD [0053] The results of the effect of AS on the survival time in **sarcoma** 180 bearing mice are summarized in FIG. 8. The median survival time in the control was 22.4 ± 2.2 days, while it. . .
- DETD [0055] The foregoing results show that **acharan sulfate** acts as **angiogenesis** inhibitor and in an **antitumor** agent in vivo. Based on the above results AS does not influence proliferation of endothelial cells as demonstrated in the. . . results show that AS markedly inhibits the development of capillary networks at two concentrations (5 and 10 μ g/CAM). Further the **antiangiogenic** activity of AS was confirmed by performing in vivo mouse matrigel plug assay. AS inhibited the formation of neovessels induced by a combination of bFGF and heparin in matrigel. In the foregoing experiments to evaluate the **antitumor** effect of AS in mice bearing murine LLC **tumors**, AS was given by daily subcutaneous injections at a site distant from the primary **tumor**. We speculated that one of the mechanisms for the **antiangiogenic** action of AS might be the suppression of matrix metalloprotease activity. However, AS shows no detectable antiprotease activity. AS also shows substantial **antitumor** activity against **sarcoma** 180-induced solid **tumor** and primary **tumor** in LLC-bearing C57BL/6 mice. A remarkable increase in lifespan was observed in **sarcoma** 180 ascitic **tumor**. Ascites fluids are direct nutritional sources for **tumor** cells.
- DETD [0056] Blackhall F. H., Merry C. L., Davies E. J., Jayson G. C., 1991. Heparan sulfate proteoglycans and **cancer**. Br. J. Cancer 85, 1094-8.
- DETD [0057] Cao, Y., Chen, C., Weatherbee, J. A., Tsang, M., Folkman, J., 1995. Gro- β , a C--X--C chemokines, is an **angiogenesis** inhibitor that suppresses the growth of Lewis lung **carcinoma** in mice. J. Exp. Med. 182, 2069-2077.
- DETD [0059] Carmeliet, P., Jain, R. K., 2000. **Angiogenesis** in **cancer** and other diseases. Nature 407, 249-257.
- DETD . . . Koolwijk, P., Van Noorden C, Van Hinsbergh, V. W., 2000. Unfractionated and low molecular weight heparin affect fibrin structure and **angiogenesis** in vitro. Cancer Res. 60, 6196-6200.
- DETD [0061] Colville-Nash, P. R., Willoughby, D. A., 1997. Growth factors in **angiogenesis**: current interest and therapeutic potential. Mol. Med. Today. 3, 14-23.
- DETD [0063] Folkman, J., 1971. **Tumor Angiogenesis**: therapeutic implications. N. Engl. J. Med. 285, 1182-1186.
- DETD [0064] Folkman, J., 1972. Anti-**angiogenesis**: new concept for therapy of solid **tumors**. Ann. Surg. 175, 409-416.
- DETD [0065] Folkman, J., 1995. **Angiogenesis** in **cancer**, vascular, rheumatoid and other disease. Nature Med. 1, 27-31.
- DETD [0066] Folkman, J., Shing, Y., 1992. **Angiogenesis**. J. Biol. Chem. 267, 10931-10934.
- DETD . . . I., Imanari, T., Linhardt, R. J., Choi, H. S., Wu, S. J., Kim, Y. S., 2001. Localization and characterization of **acharan sulfate** in the body of the giant African snail *Achatinafulica*.

- DETD Comp. Biochem. Physiol. 130, 513-519.
 [0070] Keshet, E., Ben-Sasson, S. A., 1999. Anticancer drug targets: approaching angiogenesis. J. Clin. Invest. 104, 1497-1501.
- DETD . . . B., Winer J., Armanini, M., Gillett, N., Phillips, H. S., Ferrara, N., 1993. Inhibition of vascular endothelial growth factor induced angiogenesis suppresses tumor growth in vivo. Nature 362, 841-844.
- DETD . . . Lee, J. J., Kim, K. W., 2000. Anti-angiogenic activity of torilin, a sesquiterpene compound isolated from *Torilis japonica*. Int. J. Cancer. 87, 269-275.
- DETD [0074] Kusumoto, T., Maehara, Y., Sugimachi, Y., Kohnos, S., Sugimachi, K., 1991. Hyperthermia potentiates the cytotoxic activity of 1-hexylcarbamoyl-5-fluorouracil in sarcoma-180 cells and human malignant tumor cells. Anticancer Res. 11, 1963-1966.
- DETD [0075] Liotta, L. A., Steeg, P. S., Stetler-Stevenson, W. G., 1991. Cancer metastasis and angiogenesis: an imbalance of positive and negative regulation. Cell 64, 327-336.
- DETD . . . M., Ishizuka M., Takeuchitina T., 2001. Thiolutin, an inhibitor of HUVEC adhesion to vitronectin, reduces paxillin in HUVEC and suppresses tumor cell-induced angiogenesis. Int. J. Cancer. 93, 307-316.
- DETD . . . Ashton, P., Russo, L. A., Pham, B. Q., Kasahara, N., Raizman, N. B., Fini, M. E., 2000. Curcuminoids inhibit the angiogenic response stimulated by fibroblast growth factor-2, including expression of matrix metalloproteinase gelatinase B. J. Biol. Chem. 275, 10405-10412.
- DETD [0078] Oguchi, T., Ando, T., Matsunaga, K., Fujii, T., Yoshikumi, C., Nomoto, K., 1987. Effect of PK on cytotoxicity against sarcoma-180 in tumor-bearing mice. Anticancer Res. 7, 481-484.
- DETD [0079] Oikawa, T., Hirotani, K., Ogasawara, H., Katayama, T., Nakamura, O., Iwaguchi, T., Hiragun, A., 1990. Inhibition of angiogenesis by vitamin D3 analogue. Eur. J. Pharmacol. 178, 247-250.
- DETD [0080] O'Reilly, M. S., Boehm, T., Shing, Y., Folkman, J., 1997. Endostatin: an endogenous inhibitor of angiogenesis and tumor growth. Cell 88, 277-285.
- DETD [0081] O'Reilly, M. S., Holmgren, L., Shing, Y., Chen, C., Folkman, J., 1994. Angiostatin: A novel angiogenesis inhibitor that mediates the suppression of metastases by a Lewis lung carcinoma. Cell 79, 315-328.
- DETD . . . V., Haney, J. A., Pauly, R. R., Grant, D. S., Martin G. R., 1992. Simple and quantitative method for assessing antiangiogenesis and antiangiogenic agents using reconstituted basement membrane, heparin, and fibroblast growth factor. Lab. Invest. 69, 519-528.
- DETD [0083] Sasisekharan, R., Shriver, Z., Venkataraman, G., Narayanasami, U., 2002. Roles of heparan sulfate glycosaminoglycans in cancer. Nat. Rev. Cancer 2, 521-528
- DETD [0084] Suh, H. S., Jung, E. J., Kim, T. H., Lee, H. Y., Park Y. H., Kim, K. W., 1997. Anti-angiogenic activity of ursodeoxycholic acid and its derivatives. Cancer Lett. 113, 117-122.
- DETD [0085] Tanaka, N. G., Sakamoto, A., Tohgo, Y., Nishiyama, T., Ogawa, H., 1986. Inhibitory effects of anti-angiogenic agents on neovascularization and growth of the choriollantoic membrane (CAM) --The possibility of a new CAM assay for angiogenesis inhibitor. Exp. Pathol. 30, 143-150.
- DETD [0086] Voest, E. E., Benyon, B. M., O'Reilly, M. S., Truitt, G., D'Amato, R. J., Folkman, J., 1995. Inhibition of angiogenesis

CLM in vivo by interleukin 12. J. Nat. Cancer Inst. 87, 581-586.
What is claimed is:

1. A method of treating **cancer** in a host in need of treatment comprising administering to said host an anti-**cancer** effective amount of a compound of the formula $[>4]-\alpha$ -D-GlcNpAc(1 \rightarrow 4)- α -L-IdoAp2S(1 \rightarrow]n wherein GlcNpAc is 2-acetamido 2-deoxyglucopyranose, IdoAp is idopyranosyluronic acid and S.
6. A method of treating a host by inhibiting an increase in the volume or mass of a **tumor** in said host in need of treatment which comprises administering to said host a compound of the formula $[>4]-\alpha$ -D-GlcNpAc(1 \rightarrow 4)- α -L-IdoAp2S(1 \rightarrow]n wherein . . . n is 1 to 1000 in an amount effective to inhibit an increase in the volume or mass of a **tumor**.
. . . IdoAp is idopyranosyluronic acid and S is sulfate, and n is 1 to 1000 in an amount effective to treat **cancer** in a host by inhibiting **cancer** growth in said host
. . . and n is 1 to 1000 that is effective in inhibiting an increase in the volume or mass of a **tumor** in a host in need of such inhibiting effect.

IT 192662-57-0, Acharan sulfate
(I and II; antitumor angiogenesis inhibitor acharan sulfate)

IT 192662-57-0, Acharan sulfate
(I and II; antitumor angiogenesis inhibitor acharan sulfate)

RN 192662-57-0 USPATFULL

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

STRUCTURE DIAGRAM IS NOT AVAILABLE

=> □

STRUCTURE/TEXT SEARCH

=> file caplus
FILE 'CAPLUS' ENTERED AT 15:40:05 ON 22 FEB 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 22 Feb 2006 VOL 144 ISS 9
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)

Effective October 17, 2005, revised CAS Information Use Policies apply. They are available for your review at:

<http://www.cas.org/infopolicy.html>
'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE

=> d que nos L44

```

L1           STR
L2           50 SEA FILE=REGISTRY SSS SAM L1
L3           1062 SEA FILE=REGISTRY SSS FUL L1
L18          STR
L20          79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L21          33 SEA FILE=CAPLUS ABB=ON PLU=ON L20
L22          9 SEA FILE=CAPLUS ABB=ON PLU=ON L2 (L) (THU OR DMA OR PAC OR
PKT OR BAC)/RL
L23          25 SEA FILE=CAPLUS ABB=ON PLU=ON ACHARAN SULFATE/OBI
L25          1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
L26          1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
CN
L27          24 SEA FILE=CAPLUS ABB=ON PLU=ON L25
L28          5 SEA FILE=CAPLUS ABB=ON PLU=ON L26
L33          28 SEA FILE=CAPLUS ABB=ON PLU=ON ACHARAN?/BI
L36          28 SEA FILE=CAPLUS ABB=ON PLU=ON L33 OR L27 OR L28 OR L23
L37          304372 SEA FILE=CAPLUS ABB=ON PLU=ON ?CANCER?/BI
L38          526763 SEA FILE=CAPLUS ABB=ON PLU=ON ?TUMOR?/BI
L39          3949 SEA FILE=CAPLUS ABB=ON PLU=ON ?TUMOUR?/BI
L40          49768 SEA FILE=CAPLUS ABB=ON PLU=ON ?SARCOMA?/BI
L41          444230 SEA FILE=CAPLUS ABB=ON PLU=ON ?NEOPLAS?/BI
L42          251331 SEA FILE=CAPLUS ABB=ON PLU=ON ?CARCINO?/BI
L44          7 SEA FILE=CAPLUS ABB=ON PLU=ON (L37 OR L38 OR L39 OR L40 OR
L41 OR L42) AND (L21 OR L22 OR L36)

```

=> d que nos L45

L1 STR

```

L2      50 SEA FILE=REGISTRY SSS SAM L1
L3      1062 SEA FILE=REGISTRY SSS FUL L1
L18     STR
L20     79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L21     33 SEA FILE=CAPLUS ABB=ON PLU=ON L20
L22     9 SEA FILE=CAPLUS ABB=ON PLU=ON L2 (L) (THU OR DMA OR PAC OR
          PKT OR BAC)/RL
L23    25 SEA FILE=CAPLUS ABB=ON PLU=ON ACHARAN SULFATE/OBI
L25     1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
L26     1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
          CN
L27    24 SEA FILE=CAPLUS ABB=ON PLU=ON L25
L28     5 SEA FILE=CAPLUS ABB=ON PLU=ON L26
L33    28 SEA FILE=CAPLUS ABB=ON PLU=ON ACHARAN?/BI
L36    28 SEA FILE=CAPLUS ABB=ON PLU=ON L33 OR L27 OR L28 OR L23
L43   34965 SEA FILE=CAPLUS ABB=ON PLU=ON ?ANGIOGEN?/BI
L45     4 SEA FILE=CAPLUS ABB=ON PLU=ON L43 AND (L21 OR L22 OR L36)

```

=> s (L44-L45) not L161

L168 4 ((L44 OR L45)) NOT L161

=> file medline

FILE 'MEDLINE' ENTERED AT 15:40:08 ON 22 FEB 2006

FILE LAST UPDATED: 21 FEB 2006 (20060221/UP). FILE COVERS 1950 TO DATE.

On December 11, 2005, the 2006 MeSH terms were loaded.

The MEDLINE reload for 2006 will soon be available. For details on the 2005 reload, enter HELP RLOAD at an arrow prompt (>). See also:

```

http://www.nlm.nih.gov/mesh/
http://www.nlm.nih.gov/pubs/techbull/nd04/nd04_mesh.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_med_data_changes.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_2006_MeSH.html

```

OLDMEDLINE is covered back to 1950.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2006 vocabulary.

This file contains CAS Registry Numbers for easy and accurate

=> d que nos L51

```

L1      STR
L3      1062 SEA FILE=REGISTRY SSS FUL L1
L18     STR
L20     79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L51     0 SEA FILE=MEDLINE ABB=ON PLU=ON L20

```

=> d que nos L52

```

L25     1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
L52     0 SEA FILE=MEDLINE ABB=ON PLU=ON L25

```

=> d que nos L53

```
L26      1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
          CN
L53      0 SEA FILE=MEDLINE ABB=ON PLU=ON L26
```

=> d que nos L55

```
L1      STR
L3      1062 SEA FILE=REGISTRY SSS FUL L1
L18     STR
L20     79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L54     SEL PLU=ON L20 1- CHEM : 80 TERMS
L55     0 SEA FILE=MEDLINE ABB=ON PLU=ON L54
```

=> d que nos L69

```
L25      1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
L26      1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
          CN
L50      18 SEA FILE=MEDLINE ABB=ON PLU=ON ACHARAN?
L56      SEL PLU=ON L25 1- CHEM : 2 TERMS
L57      18 SEA FILE=MEDLINE ABB=ON PLU=ON L56
L58      SEL PLU=ON L26 1- CHEM : 2 TERMS
L59      4 SEA FILE=MEDLINE ABB=ON PLU=ON L58
L60      18 SEA FILE=MEDLINE ABB=ON PLU=ON L50 OR L57 OR L59
L61      579828 SEA FILE=MEDLINE ABB=ON PLU=ON ?CANCER?
L62      790107 SEA FILE=MEDLINE ABB=ON PLU=ON ?TUMOR?
L63      133927 SEA FILE=MEDLINE ABB=ON PLU=ON ?TUMOUR?
L64      125245 SEA FILE=MEDLINE ABB=ON PLU=ON ?SARCOMA?
L65      1548799 SEA FILE=MEDLINE ABB=ON PLU=ON ?NEOPLAS?
L66      575010 SEA FILE=MEDLINE ABB=ON PLU=ON ?CARCINO?
L67      1627678 SEA FILE=MEDLINE ABB=ON PLU=ON NEOPLASMS+NT/CT
L68      3636 SEA FILE=MEDLINE ABB=ON PLU=ON ANGIOGENESIS INHIBITORS/CT
L69      4 SEA FILE=MEDLINE ABB=ON PLU=ON L60 AND (L61 OR L62 OR L63 OR
          L64 OR L65 OR L66 OR L67 OR L68)
```

=> d que nos L72

```
L25      1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
L26      1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
          CN
L50      18 SEA FILE=MEDLINE ABB=ON PLU=ON ACHARAN?
L56      SEL PLU=ON L25 1- CHEM : 2 TERMS
L57      18 SEA FILE=MEDLINE ABB=ON PLU=ON L56
L58      SEL PLU=ON L26 1- CHEM : 2 TERMS
L59      4 SEA FILE=MEDLINE ABB=ON PLU=ON L58
L60      18 SEA FILE=MEDLINE ABB=ON PLU=ON L50 OR L57 OR L59
L71      30590 SEA FILE=MEDLINE ABB=ON PLU=ON ?ANGIOGEN?
L72      2 SEA FILE=MEDLINE ABB=ON PLU=ON L60 AND L71
```

=> s (L51-L53 or L55 or L69 or L72) not L162

```
L169      3 ((L51 OR L52 OR L53) OR L55 OR L69 OR L72) NOT L162
```

*printed with
author search*

=> file embase

FILE 'EMBASE' ENTERED AT 15:40:14 ON 22 FEB 2006
Copyright (c) 2006 Elsevier B.V. All rights reserved.

FILE COVERS 1974 TO 20 Feb 2006 (20060220/ED)

EMBASE has been reloaded. Enter HELP RLOAD for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que nos L78

```
L1          STR
L3      1062 SEA FILE=REGISTRY SSS FUL L1
L18          STR
L20      79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L78      0 SEA FILE=EMBASE ABB=ON   PLU=ON   L20
```

=> d que nos L79

```
L25      1 SEA FILE=REGISTRY ABB=ON   PLU=ON   ACHARAN SULFATE/CN
L79      0 SEA FILE=EMBASE ABB=ON   PLU=ON   L25
```

=> d que nos L80

```
L26      1 SEA FILE=REGISTRY ABB=ON   PLU=ON   ACHARAN, N-DEACETYL-N-SULFO?/
CN
L80      0 SEA FILE=EMBASE ABB=ON   PLU=ON   L26
```

=> d que nos L82

```
L1          STR
L3      1062 SEA FILE=REGISTRY SSS FUL L1
L18          STR
L20      79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L81      SEL   PLU=ON   L20 1- CHEM :     80 TERMS
L82      0 SEA FILE=EMBASE ABB=ON   PLU=ON   L81
```

=> d que nos L96

```
L25      1 SEA FILE=REGISTRY ABB=ON   PLU=ON   ACHARAN SULFATE/CN
L26      1 SEA FILE=REGISTRY ABB=ON   PLU=ON   ACHARAN, N-DEACETYL-N-SULFO?/
CN
L77      16 SEA FILE=EMBASE ABB=ON   PLU=ON   ACHARAN?
L83      SEL   PLU=ON   L25 1- CHEM :     2 TERMS
L84      16 SEA FILE=EMBASE ABB=ON   PLU=ON   L83
L85      SEL   PLU=ON   L26 1- CHEM :     2 TERMS
L86      4 SEA FILE=EMBASE ABB=ON   PLU=ON   L85
L87      16 SEA FILE=EMBASE ABB=ON   PLU=ON   L77 OR L84 OR L86
L88      851781 SEA FILE=EMBASE ABB=ON   PLU=ON   ?CANCER?
L89      778474 SEA FILE=EMBASE ABB=ON   PLU=ON   ?TUMOR? OR ?TUMOUR?
L90      90530 SEA FILE=EMBASE ABB=ON   PLU=ON   ?SARCOMA?
L91      230147 SEA FILE=EMBASE ABB=ON   PLU=ON   ?NEOPLAS?
```

Krishnan 10/786613

02/22/2006

L92 517907 SEA FILE=EMBASE ABB=ON PLU=ON ?CARCINO?
L93 34532 SEA FILE=EMBASE ABB=ON PLU=ON ?ANGIOGEN?
L94 1349056 SEA FILE=EMBASE ABB=ON PLU=ON NEOPLASM+NT/CT
L95 4217 SEA FILE=EMBASE ABB=ON PLU=ON ANGIOGENESIS INHIBITOR/CT
L96 4 SEA FILE=EMBASE ABB=ON PLU=ON L87 AND (L88 OR L89 OR L90 OR
L91 OR L92 OR L93 OR L94 OR L95)

=> s (L78 or L79 or L80 or L82 or L96) not L163

L170 2 (L78 OR L79 OR L80 OR L82 OR L96) NOT L163

=> file biosis

FILE 'BIOSIS' ENTERED AT 15:40:19 ON 22 FEB 2006
Copyright (c) 2006 The Thomson Corporation

FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 15 February 2006 (20060215/ED)

=> d que nos L102

L1 STR
L3 1062 SEA FILE=REGISTRY SSS FUL L1
L18 STR
L20 79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L102 0 SEA FILE=BIOSIS ABB=ON PLU=ON L20

=> d que nos L106

L1 STR
L3 1062 SEA FILE=REGISTRY SSS FUL L1
L18 STR
L20 79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L105 SEL PLU=ON L20 1- CHEM : 80 TERMS
L106 0 SEA FILE=BIOSIS ABB=ON PLU=ON L105

=> d que nos L118

L25 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN
L26 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
CN
L101 22 SEA FILE=BIOSIS ABB=ON PLU=ON ACHARAN?
L103 17 SEA FILE=BIOSIS ABB=ON PLU=ON L25
L104 1 SEA FILE=BIOSIS ABB=ON PLU=ON L26
L107 SEL PLU=ON L25 1- CHEM : 2 TERMS
L108 21 SEA FILE=BIOSIS ABB=ON PLU=ON L107
L109 SEL PLU=ON L26 1- CHEM : 2 TERMS
L110 4 SEA FILE=BIOSIS ABB=ON PLU=ON L109
L111 22 SEA FILE=BIOSIS ABB=ON PLU=ON L101 OR L103 OR L104 OR L108
OR L110
L112 546518 SEA FILE=BIOSIS ABB=ON PLU=ON ?CANCER?
L113 976062 SEA FILE=BIOSIS ABB=ON PLU=ON ?TUMOR? OR ?TUMOUR?
L114 95426 SEA FILE=BIOSIS ABB=ON PLU=ON ?SARCOMA?

printed with
author search

L115 759144 SEA FILE=BIOSIS ABB=ON PLU=ON ?NEOPLAS?
 L116 507193 SEA FILE=BIOSIS ABB=ON PLU=ON ?CARCINO?
 L117 35893 SEA FILE=BIOSIS ABB=ON PLU=ON ?ANGIOGEN?
 L118 4 SEA FILE=BIOSIS ABB=ON PLU=ON L111 AND (L112 OR L113 OR L114
 OR L115 OR L116 OR L117)

=> s (L102 or L106 or L118) not L164

L171 2 (L102 OR L106 OR L118) NOT L164

=> file wpix

FILE 'WPIX' ENTERED AT 15:40:23 ON 22 FEB 2006
 COPYRIGHT (C) 2006 THE THOMSON CORPORATION

FILE LAST UPDATED: 17 FEB 2006 <20060217/UP>
 MOST RECENT DERWENT UPDATE: 200612 <200612/DW>
 DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
 PLEASE VISIT:
[<<<](http://www.stn-international.de/training_center/patents/stn_guide.pdf)

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
<http://scientific.thomson.com/support/patents/coverage/latestupdates/>

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
 GUIDES, PLEASE VISIT:
<http://scientific.thomson.com/support/products/dwpi/>

>>> FAST-ALERTING ACCESS TO NEWLY-PUBLISHED PATENT
 DOCUMENTATION NOW AVAILABLE IN DERWENT WORLD PATENTS INDEX
 FIRST VIEW - FILE WPIFV.
 FOR FURTHER DETAILS:

<http://scientific.thomson.com/support/products/dwpifv/>

>>> THE CPI AND EPI MANUAL CODES WILL BE REVISED FROM UPDATE 200601.
 PLEASE CHECK:
<http://scientific.thomson.com/support/patents/dwpiref/reftools/classification>

>>> PLEASE BE AWARE OF THE NEW IPC REFORM IN 2006, SEE
http://www.stn-international.de/stndatabases/details/ ipc_reform.html and
[<<<](http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf)

=> d que nos L159

L135 120107 SEA FILE=USPATFULL ABB=ON PLU=ON ?CANCER?
 L136 104777 SEA FILE=USPATFULL ABB=ON PLU=ON ?TUMOR?
 L137 12054 SEA FILE=USPATFULL ABB=ON PLU=ON ?TUMOUR?
 L138 34800 SEA FILE=USPATFULL ABB=ON PLU=ON ?SARCOMA?
 L139 37564 SEA FILE=USPATFULL ABB=ON PLU=ON ?NEOPLAS?
 L140 67199 SEA FILE=USPATFULL ABB=ON PLU=ON ?CARCINO?
 L141 22227 SEA FILE=USPATFULL ABB=ON PLU=ON ?ANGIOGEN?
 L156 5 SEA FILE=WPIX ABB=ON PLU=ON ACHARAN?
 L157 119623 SEA FILE=WPIX ABB=ON PLU=ON (L135 OR L136 OR L137 OR L138 OR
 L139 OR L140 OR L141)
 L159 3 SEA FILE=WPIX ABB=ON PLU=ON L156 AND L157

printed with author search

Krishnan 10/786613

02/22/2006

=> d que nos L152

L18 STR
L151 1 SEA FILE=WPIX SSS FUL L18
L152 1 SEA FILE=WPIX ABB=ON PLU=ON L151/DCR

=> d que nos L158

L18 STR
L135 120107 SEA FILE=USPATFULL ABB=ON PLU=ON ?CANCER?
L136 104777 SEA FILE=USPATFULL ABB=ON PLU=ON ?TUMOR?
L137 12054 SEA FILE=USPATFULL ABB=ON PLU=ON ?TUMOUR?
L138 34800 SEA FILE=USPATFULL ABB=ON PLU=ON ?SARCOMA?
L139 37564 SEA FILE=USPATFULL ABB=ON PLU=ON ?NEOPLAS?
L140 67199 SEA FILE=USPATFULL ABB=ON PLU=ON ?CARCINO?
L141 22227 SEA FILE=USPATFULL ABB=ON PLU=ON ?ANGIOGEN?
L151 1 SEA FILE=WPIX SSS FUL L18
L152 1 SEA FILE=WPIX ABB=ON PLU=ON L151/DCR
L157 119623 SEA FILE=WPIX ABB=ON PLU=ON (L135 OR L136 OR L137 OR L138 OR
L139 OR L140 OR L141)
L158 0 SEA FILE=WPIX ABB=ON PLU=ON L152 AND L157

=> s (L159 or L152 or L158) not L165

L172 2 (L159 OR L152 OR L158) NOT L165 *printed with
author search*

=> file uspatfull

FILE 'USPATFULL' ENTERED AT 15:40:28 ON 22 FEB 2006
CA INDEXING COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

FILE COVERS 1971 TO PATENT PUBLICATION DATE: 21 Feb 2006 (20060221/PD)
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)
HIGHEST GRANTED PATENT NUMBER: US7003800
HIGHEST APPLICATION PUBLICATION NUMBER: US2006037120
CA INDEXING IS CURRENT THROUGH 21 Feb 2006 (20060221/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 21 Feb 2006 (20060221/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Dec 2005
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Dec 2005

=> d que nos L128

L1 STR
L3 1062 SEA FILE=REGISTRY SSS FUL L1
L18 STR
L20 79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L127 SEL PLU=ON L20 1- CHEM : 80 TERMS
L128 0 SEA FILE=USPATFULL ABB=ON PLU=ON L127

=> d que nos L142

L1 STR
L3 1062 SEA FILE=REGISTRY SSS FUL L1
L18 STR
L20 79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L25 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN SULFATE/CN

L26 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACHARAN, N-DEACETYL-N-SULFO?/
CN
 L124 1 SEA FILE=USPATFULL ABB=ON PLU=ON L20
 L125 2 SEA FILE=USPATFULL ABB=ON PLU=ON L25
 L126 1 SEA FILE=USPATFULL ABB=ON PLU=ON L26
 L129 SEL PLU=ON L25 1- CHEM : 2 TERMS
 L130 4 SEA FILE=USPATFULL ABB=ON PLU=ON L129
 L131 SEL PLU=ON L26 1- CHEM : 2 TERMS
 L132 1 SEA FILE=USPATFULL ABB=ON PLU=ON L131
 L133 4 SEA FILE=USPATFULL ABB=ON PLU=ON ACHARAN?
 L134 5 SEA FILE=USPATFULL ABB=ON PLU=ON L124 OR L125 OR L126 OR
L130 OR L132 OR L133
 L135 120107 SEA FILE=USPATFULL ABB=ON PLU=ON ?CANCER?
 L136 104777 SEA FILE=USPATFULL ABB=ON PLU=ON ?TUMOR?
 L137 12054 SEA FILE=USPATFULL ABB=ON PLU=ON ?TUMOUR?
 L138 34800 SEA FILE=USPATFULL ABB=ON PLU=ON ?SARCOMA?
 L139 37564 SEA FILE=USPATFULL ABB=ON PLU=ON ?NEOPLAS?
 L140 67199 SEA FILE=USPATFULL ABB=ON PLU=ON ?CARCINO?
 L141 22227 SEA FILE=USPATFULL ABB=ON PLU=ON ?ANGIOGEN?
 L142 4 SEA FILE=USPATFULL ABB=ON PLU=ON L134 AND (L135 OR L136 OR
L137 OR L138 OR L139 OR L140 OR L141)

=> s (L128 or L142) not L166

L173 2 (L128 OR L142) NOT L166

=> => dup rem L168 L169 L170 L171 L172 L173

FILE 'CAPLUS' ENTERED AT 15:42:45 ON 22 FEB 2006

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'MEDLINE' ENTERED AT 15:42:45 ON 22 FEB 2006

FILE 'EMBASE' ENTERED AT 15:42:45 ON 22 FEB 2006

Copyright (c) 2006 Elsevier B.V. All rights reserved.

FILE 'BIOSIS' ENTERED AT 15:42:45 ON 22 FEB 2006

Copyright (c) 2006 The Thomson Corporation

FILE 'WPIX' ENTERED AT 15:42:45 ON 22 FEB 2006

COPYRIGHT (C) 2006 THE THOMSON CORPORATION

FILE 'USPATFULL' ENTERED AT 15:42:45 ON 22 FEB 2006

CA INDEXING COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

PROCESSING COMPLETED FOR L168

PROCESSING COMPLETED FOR L169

PROCESSING COMPLETED FOR L170

PROCESSING COMPLETED FOR L171

PROCESSING COMPLETED FOR L172

PROCESSING COMPLETED FOR L173

L174 8 DUP REM L168 L169 L170 L171 L172 L173 (7 DUPLICATES REMOVED)

ANSWERS '1-4' FROM FILE CAPLUS

ANSWER '5' FROM FILE MEDLINE

ANSWER '6' FROM FILE WPIX

ANSWERS '7-8' FROM FILE USPATFULL

=> d ibib abs hitind hitstr L174 1-4; d iall L174 5; d ibib abs hitstr L174 6; d
ibib abs kwic hitstr L174 7-8

L174 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
 ACCESSION NUMBER: 2004:727950 CAPLUS
 DOCUMENT NUMBER: 141:376745
 TITLE: Detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)_n
 AUTHOR(S): ten Dam, Gerdy B.; van de Westerlo, Els M. A.; Smetsers, Toon F. C. M.; Willemse, Marieke; van Muijen, Goos N. P.; Merry, Catherine L. R.; Gallagher, John T.; Kim, Yeong S.; van Kuppevelt, Toin H.
 CORPORATE SOURCE: Departments of Biochemistry and Pathology, Nijmegen Center for Molecular Life Sciences, University Medical Center Nijmegen, Nijmegen, 6500 HB, Neth.
 SOURCE: Journal of Biological Chemistry (2004), 279(37), 38346-38352
 PUBLISHER: CODEN: JBCHA3; ISSN: 0021-9258
 American Society for Biochemistry and Molecular Biology
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The snail glycosaminoglycan **acharan sulfate** (AS) is structurally related to heparan sulfates (HS) and has a repeating disaccharide structure of α -D-N-acetylglucosaminyl-2-O-sulfo- α -L-iduronic acid (GlcNAc-IdoA2S) residues. Using the phage display technol., a unique antibody (MW3G3) was selected against AS with a VH3, DP 47, and a CDR3 amino acid sequence of QKKRPRF. Antibody MW3G3 did not react with desulfated, N-deacetylated or N-sulfated AS, indicating that reactivity depends on N-acetyl and 2-O-sulfate groups. Antibody MW3G3 also had a high preference for (modified) heparin oligosaccharides containing N-acetylated glucosamine and 2-O-sulfated iduronic acid residues. In tissues, antibody MW3G3 identified a HS oligosaccharide epitope containing N-acetylated glucosamine and 2-O-sulfated iduronic acid residues as enzymic N-deacetylation of HS in situ prevented staining, and 2-O-sulfotransferase-deficient Chinese hamster ovary cells were not reactive. An immunohistochem. survey using various rat organs revealed a distinct distribution of the MW3G3 epitope, which was primarily present in the basal laminae of most (but not all) blood vessels and of some epithelia, including human skin. No staining was observed in the glycosaminoglycan-rich **tumor** matrix of metastatic melanoma. In conclusion, we have selected an antibody that identifies HS oligosaccharides containing N-acetylated glucosamine and 2-O-sulfated iduronic acid residues. This antibody may be instrumental in identifying structural alterations in HS in health and disease.
 CC 9-16 (Biochemical Methods)
 IT Blood vessel
 Human
 Melanoma
 Phage display
 Skin
 Snail
 (detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)_n)
 IT Antibodies and Immunoglobulins
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)_n)

IT 7512-17-6, N-Acetylglucosamine 9050-30-0 192662-57-0,
Acharan sulfate
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (detection of 2-O-sulfated iduronate and N-acetylglucosamine units in
 heparan sulfate by an antibody selected against **acharan**
 sulfate (IdoA2S-GlcNAc)n)

IT 177791-14-9
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (repeating unit, detection of 2-O-sulfated iduronate and
 N-acetylglucosamine units in heparan sulfate by an antibody selected
 against **acharan sulfate** (IdoA2S-GlcNAc)n)

IT 192662-57-0, Acharan sulfate
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (detection of 2-O-sulfated iduronate and N-acetylglucosamine units in
 heparan sulfate by an antibody selected against **acharan**
 sulfate (IdoA2S-GlcNAc)n)

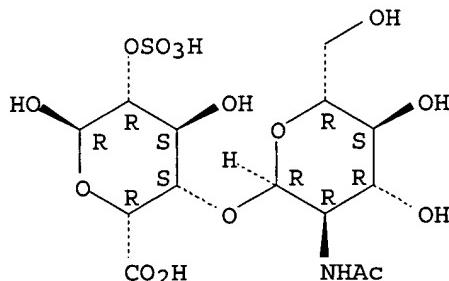
RN 192662-57-0 CAPLUS
 CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 177791-14-9
 RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (repeating unit, detection of 2-O-sulfated iduronate and
 N-acetylglucosamine units in heparan sulfate by an antibody selected
 against **acharan sulfate** (IdoA2S-GlcNAc)n)

RN 177791-14-9 CAPLUS
 CN α -L-Idopyranuronic acid, 4-O-[2-(acetylamino)-2-deoxy- α -D-glucopyranosyl]-, 2-(hydrogen sulfate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L174 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
 ACCESSION NUMBER: 2004:924013 CAPLUS
 DOCUMENT NUMBER: 142:109434
 TITLE: Novel **acharan sulfate** lyases
 specifically degrading **acharan sulfate**, preparing method and use thereof
 INVENTOR(S): Kim, Byeong Taek; Kim, Dong Hyun; Kim, Wan Seok; Kim, Young Sik
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7
 DOCUMENT TYPE: Patent
 LANGUAGE: Korean
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2002046294	A	20020621	KR 2000-75605 KR 2000-75605	20001212 20001212
PRIORITY APPLN. INFO.:				
AB Novel acharan sulfate lyases specifically degrading acharan sulfate, a preparing method and a use thereof are provided, therefore the acharan sulfate lyase having improved substrate specificity and stability can be produced and it can be useful in producing acharan sulfate oligosaccharides inhibiting the metastasis of cancer. The acharan sulfate lyase capable of degrading glycosaminoglycans (GAG) is isolated from Bacteroides stercoris HJ-15, wherein glycosaminoglycans (GAG) are acharan sulfate, heparin and heparan sulfate; the acharan sulfate lyase has 82,500 Da of mol. weight and optimal pH of 7.0 to 7.2 and optimal temperature of 42 to 45 deg. C; and the activity of enzyme is increased by Mg ²⁺ or Mn ²⁺ and inhibited by Cu ²⁺ or Ni ²⁺ . The method for producing the acharan sulfate lyase comprises the steps of: culturing Bacteroides stercoris in an appropriate medium; recovering the cultured cells and preparing cell extract; and subjecting the cell extract to chromatog., wherein the chromatog. is selected from QAE-cellulose, DEAE-cellulose, CM-Sephadex C-50, hydroxyapatite, CM-Sephadex C-25 and Hi-Trap SP.				
IC ICM C12N009-88				
CC 7-1 (Enzymes)				
ST Section cross-reference(s): 1, 9, 10				
ST Bacteroides acharan sulfate lyase glycosaminoglycan degrdn				
IT Neoplasm				
	(metastasis, inhibition; novel acharan sulfate lyases specifically degrading acharan sulfate, preparing method and use thereof)			
IT Antitumor agents				
	Bacteroides stercoris			
	Purification			
	(novel acharan sulfate lyases specifically degrading acharan sulfate, preparing method and use thereof)			
IT Glycosaminoglycans, processes				
	RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)			
	(novel acharan sulfate lyases specifically degrading acharan sulfate, preparing method and use thereof)			
IT 9005-49-6, Heparin, processes	9050-30-0 192662-57-0,			
	Acharan sulfate			
	RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)			
	(novel acharan sulfate lyases specifically degrading acharan sulfate, preparing method and use thereof)			
IT 216503-91-2P, Acharan sulfate lyase				
	RL: BSU (Biological study, unclassified); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)			
	(novel acharan sulfate lyases specifically degrading acharan sulfate, preparing method and use thereof)			
IT 192662-57-0, Acharan sulfate				
	RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)			
	(novel acharan sulfate lyases specifically			

degrading acharan sulfate, preparing method and use thereof)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L174 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3

ACCESSION NUMBER: 2002:813649 CAPLUS

DOCUMENT NUMBER: 138:314215

TITLE: Inhibition by acharan sulphate of angiogenesis in experimental inflammation models

AUTHOR(S): Ghosh, Ajay Kumar; Hirasawa, Noriyasu; Lee, Yeon Sil; Kim, Yeong Sik; Shin, Kuk Hyun; Ryu, Nama; Ohuchi, Kazuo

CORPORATE SOURCE: Laboratory of Pathophysiological Biochemistry, Graduate School of Pharmaceutical Sciences, Tohoku University, Miyagi, 980-8578, Japan

SOURCE: British Journal of Pharmacology (2002), 137(4), 441-448

CODEN: BJPCBM; ISSN: 0007-1188

PUBLISHER: Nature Publishing Group

DOCUMENT TYPE: Journal

LANGUAGE: English

AB 1 The effects of acharan sulfate, a glycosaminoglycan isolated from the giant African snail *Achatina fulica*, on angiogenesis in the granulation tissue were analyzed using an air pouch-type carrageenin-induced inflammation model in rats and a cotton thread-induced inflammation model in mice. 2 In the carrageenin-induced inflammation model in rats, intra-pouch injections of acharan sulfate (5 and 50 µg) inhibited the pouch fluid accumulation and the granulation tissue formation as well as the angiogenesis in the granulation tissue at day 6 in a dose-dependent manner. 3 The inhibitory effects of acharan sulfate at 50 µg on the pouch fluid accumulation and the leukocyte infiltration into the pouch fluid was not so effective as that of the cyclo-oxygenase inhibitor indomethacin at 100 µg, but the inhibitory effects of acharan sulfate at 50 µg on the granulation tissue formation and angiogenesis in the granulation tissue were almost the same as those of indomethacin at 100 µg. 4 Acharan sulfate did not affect levels of vascular endothelial growth factor (VEGF) in the granulation tissue and in the pouch fluid at day 6, but indomethacin significantly lowered them. 5 In the cotton thread-induced inflammation model in mice, injections of acharan sulfate (10 µg) at the site of the cotton thread implantation inhibited the granulation tissue formation and angiogenesis as indomethacin (20 µg) did. Acharan sulfate (10 µg) did not affect levels of VEGF in the cotton thread-induced granulation tissue at day 5, but indomethacin (20 µg) significantly lowered them. 6 In culture of human vascular endothelial cells, acharan sulfate at 10 and 100 µg ml-1 inhibited VEGF-induced capillary tube formation. 7 These findings suggest that the inhibitory effect of acharan sulfate on angiogenesis in carrageenin- and cotton thread-induced granulation tissues is not due to the inhibition of VEGF protein induction, but is due to the inhibition of VEGF-induced vascular tube formation.

CC 1-8 (Pharmacology)

ST acharan sulfate angiogenesis inhibitor
inflammation VEGF

IT Blood vessel

Krishnan 10/786613

02/22/2006

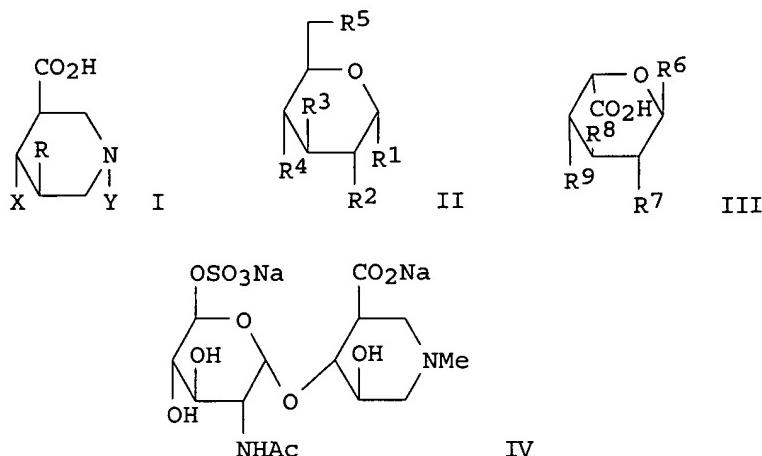
(endothelium; inhibition by acharan sulfate of
angiogenesis in exptl. inflammation models)
IT Angiogenesis
Angiogenesis inhibitors
Capillary vessel
Human
Inflammation
(inhibition by acharan sulfate of
angiogenesis in exptl. inflammation models)
IT Endothelium
(vascular; inhibition by acharan sulfate of
angiogenesis in exptl. inflammation models)
IT 106096-93-9, Basic fibroblast growth factor 127464-60-2, Vascular
endothelial growth factor
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(inhibition by acharan sulfate of
angiogenesis in exptl. inflammation models)
IT 53-86-1, Indomethacin 145-63-1, Suramin 192662-57-0,
Acharan sulfate
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL
(Biological study); USES (Uses)
(inhibition by acharan sulfate of
angiogenesis in exptl. inflammation models)
IT 192662-57-0, Acharan sulfate
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL
(Biological study); USES (Uses)
(inhibition by acharan sulfate of
angiogenesis in exptl. inflammation models)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L174 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:79185 CAPLUS
DOCUMENT NUMBER: 144:150592
TITLE: Preparation of aza uronic acids as heparanase
inhibitors and antitumor and
antiinflammatory agents
INVENTOR(S): Petitou, Maurice; Driguez, Pierre Alexandre
PATENT ASSIGNEE(S): Sanofi-Synthelabo, Fr.
SOURCE: Fr. Demande, 72 pp.
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
FR 2873377	A1	20060127	FR 2004-8160	20040723
PRIORITY APPLN. INFO.:			FR 2004-8160	20040723
GI				



- AB Title aza sugars I, wherein R is H, OH, OSO₃H, acyl, O-aralkyl; X is OH, formula II, wherein R1 is O-sugar residue; R2 is NH₂, NHCO-alkyl, NHCO-aryl, NHSO₃H, OH, O-alkyl, O-aralkyl, OSO₃H; R3 is OH, OSO₃H, O-alkyl, O-aralkyl; R4 is OH, OSO₃H, O-alkyl, O-aralkyl, sugar formula III, wherein R6 is O-sugar residue; R7 and R8 are independently same as R3; R9 is OH, OSO₃H, O-alkyl, O-aralkyl, sugar residue; Y is H, alkyl, sugar residue, uronic acid residue, were prepared and used as heparanase inhibitors and **antitumor** and antiinflammatory agents. Thus, disaccharide uronic acid II was prepared and used as heparanase inhibitor and **antitumor** and antiinflammatory agent (no data).
- CC 33-8 (Carbohydrates)
- ST Section cross-reference(s): 1, 7, 63
- ST aza uronic acid prepn heparanase inhibitor **antitumor**
- IT antiinflammatory drug
- IT Anti-inflammatory agents
- Antitumor** agents
- Drugs
- (preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)
- IT Disaccharides
- Uronic acids
- RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
- (preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)
- IT 89800-66-8, Heparanase
- RL: BSU (Biological study, unclassified); BIOL (Biological study)
- (preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)
- IT 873664-70-1P 873664-71-2P 873664-72-3P 873664-73-4P
873664-77-8P 873664-96-1P 873665-17-9P 873665-21-5P 873665-32-8P
873665-33-9P 873665-34-0P 873665-38-4P
- RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
- (preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)
- IT 67313-50-2 103703-07-7 114869-97-5 131522-43-5 135415-92-8
873664-53-0 873664-81-4 873664-99-4

RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of aza uronic acids as heparanase inhibitors and
 antitumor and antiinflammatory agents)

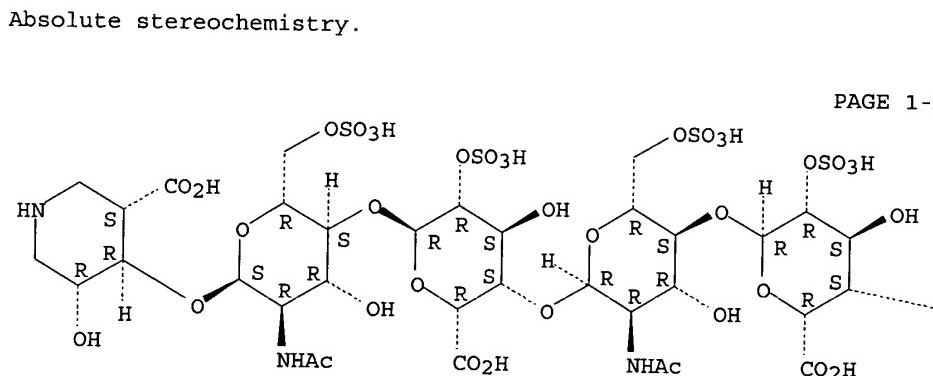
IT 215725-53-4P 873664-54-1P 873664-55-2P 873664-56-3P 873664-57-4P
 873664-58-5P 873664-59-6P 873664-60-9P 873664-61-0P 873664-62-1P
 873664-63-2P 873664-64-3P 873664-65-4P 873664-66-5P 873664-67-6P
 873664-68-7P 873664-69-8P 873664-74-5P 873664-75-6P
 873664-76-7P 873664-78-9P 873664-79-0P 873664-80-3P 873664-82-5P
 873664-83-6P 873664-84-7P 873664-85-8P 873664-86-9P 873664-87-0P
 873664-88-1P 873664-89-2P 873664-90-5P 873664-91-6P 873664-92-7P
 873664-93-8P 873664-94-9P 873664-95-0P 873664-97-2P 873664-98-3P
 873665-00-0P 873665-01-1P 873665-02-2P 873665-03-3P 873665-04-4P
 873665-05-5P 873665-06-6P 873665-07-7P 873665-08-8P 873665-09-9P
 873665-10-2P 873665-11-3P 873665-12-4P 873665-13-5P 873665-14-6P
 873665-15-7P 873665-16-8P 873665-18-0P 873665-19-1P 873665-20-4P
 873665-22-6P 873665-23-7P 873665-24-8P 873665-25-9P 873665-26-0P
 873665-27-1P 873665-28-2P 873665-29-3P 873665-30-6P 873665-31-7P
 873665-35-1P 873665-36-2P 873665-37-3P 873839-12-4P 873839-13-5P
 873839-14-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of aza uronic acids as heparanase inhibitors and
 antitumor and antiinflammatory agents)

IT 873665-39-5P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of aza uronic acids as heparanase inhibitors and
 antitumor and antiinflammatory agents)

IT 873664-70-1P 873664-73-4P
 RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (preparation of aza uronic acids as heparanase inhibitors and
 antitumor and antiinflammatory agents)

RN 873664-70-1 CAPLUS
 CN INDEX NAME NOT YET ASSIGNED

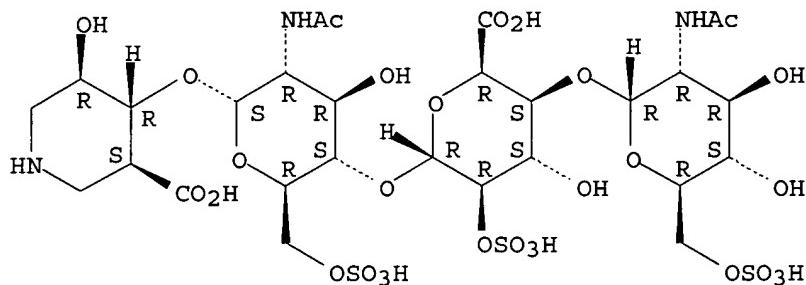


PAGE 1-B

----OSO₃H

RN 873664-73-4 CAPLUS
 CN INDEX NAME NOT YET ASSIGNED

Absolute stereochemistry.



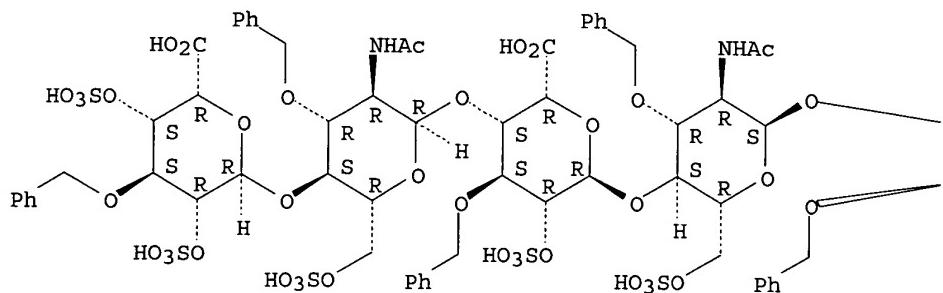
●5 Na

IT 873664-69-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (preparation of aza uronic acids as heparanase inhibitors and
 antitumor and antiinflammatory agents)

RN 873664-69-8 CAPLUS
 CN INDEX NAME NOT YET ASSIGNED

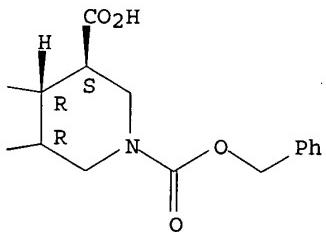
Absolute stereochemistry.

PAGE 1-A



● 8 Na

PAGE 1-B



REFERENCE COUNT:

2

THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L174 ANSWER 5 OF 8 MEDLINE on STN
 ACCESSION NUMBER: 2000014519 MEDLINE
 DOCUMENT NUMBER: PubMed ID: 10545209
 TITLE: Effect of fully sulfated glycosaminoglycans on pulmonary artery smooth muscle cell proliferation.
 AUTHOR: Garg H G; Joseph P A; Thompson B T; Hales C A; Toida T;
 Imanari T; Capila I; Linhardt R J
 CORPORATE SOURCE: Pulmonary/Critical Care Unit, Massachusetts General Hospital, Boston, Massachusetts 02114, USA..
 hgarg@partners.org
 SOURCE: Archives of biochemistry and biophysics, (1999 Nov 15) 371 (2) 228-33.
 Journal code: 0372430. ISSN: 0003-9861.
 PUB. COUNTRY: United States
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 199912

ENTRY DATE: Entered STN: 20000113
 Last Updated on STN: 20000113
 Entered Medline: 19991221

ABSTRACT:

Fully sulfated heparin and other glycosaminoglycans, namely heparan, chondroitin, and dermatan sulfates, and hyaluronan have been prepared by using sulfur trioxide under mild chemical conditions. All these derivatives were assayed for antiproliferative activity on cultured bovine pulmonary artery smooth muscle cells (BPASMCs). No appreciable difference was found between heparin and fully sulfated heparin. Chondroitin and dermatan sulfates actually stimulated BPASMCs growth but full sulfonation made them strongly antiproliferative. Native hyaluronan was not antiproliferative but became strongly so after sulfonation. Neither acharan sulfate nor ***N*** -sulfoacharan sulfate had any antiproliferative activity. This suggests that O-sulfonation of the polysaccharide is critical for antiproliferative activity, whereas N-sulfonation of glucosamine residues is not.

Copyright 1999 Academic Press.

CONTROLLED TERM: Check Tags: Comparative Study
 Animals

- *Antineoplastic Agents: PD, pharmacology
- Carbohydrate Sequence
- Cattle
- Cells, Cultured
- Glycosaminoglycans: CH, chemistry
- *Glycosaminoglycans: PD, pharmacology
- Molecular Sequence Data
- *Muscle, Smooth, Vascular: DE, drug effects
- *Pulmonary Artery: CY, cytology
- Sequence Analysis

CAS REGISTRY NO.: 64082-61-7 (A73025)

CHEMICAL NAME: O (Antineoplastic Agents); O (Glycosaminoglycans)

L174 ANSWER 6 OF 8 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

ACCESSION NUMBER: 2006-100079 [10] WPIX

DOC. NO. CPI: C2006-035709

TITLE: New oligosaccharide compounds are neuronal growth modulators useful to treat neurological disorder (CNS lesions, gliosis, Parkinson's disease, Alzheimer's disease, neuronal degeneration or spinal cord trauma).

DERWENT CLASS: A11 A14 A96 B02 B04

INVENTOR(S): GAMA, C I; HSIEH-WILSON, L C; MABON, R; TULLY, S E

PATENT ASSIGNEE(S): (GAMA-I) GAMA C I; (HSIEH-I) HSIEH-WILSON L C; (MABO-I) MABON R; (TULL-I) TULLY S E; (CALY) CALIFORNIA INST OF TECHNOLOGY

COUNTRY COUNT: 111

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2005118609	A2	20051215 (200610)*	EN	89	
RW:	AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LT LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW				
W:	AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NG NI				

Krishnan 10/786613

02/22/2006

NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT
TZ UA UG US UZ VC VN YU ZA ZM ZW
US 2006025379 A1 20060202 (200610)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2005118609	A2	WO 2005-US18906	20050526
US 2006025379	A1 Provisional	US 2004-574433P	20040526
		US 2005-140618	20050526

PRIORITY APPLN. INFO: US 2004-574433P 20040526; US
2005-140618 20050526

AN 2006-100079 [10] WPIX

AB WO2005118609 A UPAB: 20060209

NOVELTY - Oligosaccharide compounds (I) and their derivatives are new.

DETAILED DESCRIPTION - Oligosaccharide compounds of formula (I) and their derivatives are new.

R1-R4 = H, sulfate, phosphate or carboxylate;

R5 = alkyl or alkenyl (both optionally substituted); and
n = 0-100.

INDEPENDENT CLAIMS are also included for:

(1) a polysaccharide compound containing a repeating dimer unit of formula (IIa);

(2) a substantially pure compound (I);

(3) a oligosaccharide compound (III) of formula (R-L-R);

(4) a glycopolymers (IV) comprising a polymer backbone P conjugated with a R via a linker L (P is a polymer (polyacrylamide, polyacrylate of poly(N-acryloxy)succinimide));

(5) a method of inducing growth of differentiated neural stem cells comprising administration of (I);

(6) a method for screening for small molecule inducers of neuronal growth comprising applying to a cultured neuron a small molecule of (I) and determining an increase in percent growth in axon length of treated versus untreated neuron; and

(7) an article of manufacture comprising packaging material (I).

R = oligosaccharide compound of formula (IIIa); and

L = bifunctional linker molecule

Provided that R1-R4 is not H, when R1 is sulfate, then R2 is not OH, when R2 is sulfate, then R1 is not OH.

ACTIVITY - Neuroprotective; CNS-Gen.; Antiparkinsonian; Nootropic; Vulnerary.

MECHANISM OF ACTION - Neuronal growth modulator; Fibroblast growth factor modulator.

The ability of (I) to modulate neuronal growth was tested using biological assays. The results showed that (I) promotes outgrowth of cultured dopaminergic and DRG neurons by 30-40% relative to the untreated controls.

USE - (I) is useful: to treat a neurological disorder (central nervous system lesions, gliosis, Parkinson's disease, Alzheimer's disease, neuronal degeneration or spinal cord trauma); and promotes regeneration of an injured or severed nerve or nerve tissue or promotes outgrowth in a neuronal cell (brain, CNS or peripheral nerves) and neuronal growth in a cultured neuron (hippocampal neurons, dopaminergic neurons or dorsal root ganglion neuron) (claimed).

ADVANTAGE - (I) is substantially pure (claimed).

Dwg.0/7

DCSE 1239692-1-0-0

SDCN RALA6S

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

L174 ANSWER 7 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2006:28545 USPATFULL
 TITLE: Small molecule stimulators of neuronal growth
 INVENTOR(S): Hsieh-Wilson, Linda C., San Marino, CA, UNITED STATES
 Tully, Sarah E., Pasadena, CA, UNITED STATES
 Mabon, Ross, Princeton, NJ, UNITED STATES
 Gama, Cristal I., Los Angeles, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2006025379	A1	20060202
APPLICATION INFO.:	US 2005-140618	A1	20050526 (11)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2004-574433P	20040526 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	FISH & RICHARDSON, PC, P.O. BOX 1022, MINNEAPOLIS, MN, 55440-1022, US	
NUMBER OF CLAIMS:	57	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	7 Drawing Page(s)	
LINE COUNT:	2411	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Provided herein are small molecule stimulators of neuronal growth, their preparation, and their use for treatment of neurological disorders. In one embodiment, provided herein are methods of treatment, prevention, or amelioration of a variety of medical conditions associated with neurological disorders using the compounds and compositions provided herein.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . the growth of the implanted tissue. In certain embodiments, the compounds provided herein interact with growth factors and cytokines (e.g., tumor necrosis factor- α or TNF α and nerve growth factor or NGF).

DRWD FIG. 5 illustrates binding selectivity of tetrasaccharides CS-E and CS-C, and dimer CS-E to tumor necrosis factor- α .

DETD In one embodiment, liposomal suspensions, including tissue-targeted liposomes, such as tumor-targeted liposomes, may also be suitable as pharmaceutically acceptable carriers. These may be prepared according to methods known to those skilled. . .

DETD . . . 30-40% relative to the untreated controls. FIGS. 5 and 7 illustrate binding of tetrasaccharides CS-E, CS-C and disaccharide CS-E to tumor necrosis factor- α and midkine, respectively.

DETD . . . proteins or other factors that stimulate the growth. In certain embodiments, the compounds provided herein are administered in combination with tumor necrosis factor- α or TNF α and nerve growth factor or NGF. In certain embodiments, the compounds

provided herein interact with growth factors and cytokines (e.g., tumor necrosis factor- α or TNF α and nerve growth factor or NGF).

IT 727991-33-5P 727991-35-7P 866719-13-3P 871095-82-8P 871095-83-9P
871095-84-0P

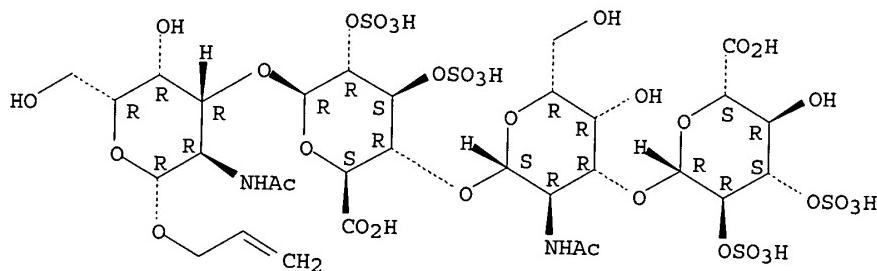
(preparation of acetamidodeoxy-oligosaccharide uronic acids as small mol. stimulators of neuronal growth)

IT 871095-84-0P
(preparation of acetamidodeoxy-oligosaccharide uronic acids as small mol. stimulators of neuronal growth)

RN 871095-84-0 USPATFULL

CN INDEX NAME NOT YET ASSIGNED

Absolute stereochemistry.



● 6 Na

L174 ANSWER 8 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2003:238439 USPATFULL
TITLE: Method for linking nucleic acids and/or glycosaminoglycans to polar/hydrophilic materials
INVENTOR(S): Van Kuppevelt, Antonius H M S M, Nijmegen, NETHERLANDS
Veerkamp, Jacobus Henricus, Nijmegen, NETHERLANDS
Blank, Thiemo Arnim, Plankstadt, GERMANY, FEDERAL REPUBLIC OF

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003166597	A1	20030904
APPLICATION INFO.:	US 6933379	B2	20050823
	US 2003-258093	A1	20030404 (10)
	WO 2001-EP3666		20010330

	NUMBER	DATE
PRIORITY INFORMATION:	GB 2000-9771	20000419
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	Jesse A Hirshman, Kirkpatrick & Lockhart, Henry W Oliver Building, 535 Smithfield Street, Pittsburgh, PA, 15222-2312	
NUMBER OF CLAIMS:	20	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	3 Drawing Page(s)	

LINE COUNT: 776

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to a method for linking nucleic acid and/or glycosaminoglycan or glycosaminoglycan mimetics to a polar/hydrophilic material, characterized by contacting a nucleic acid and/or glycosaminoglycan and a polar/hydrophilic material with each other in the presence of a solution being 20 to 100 percent saturated with a non-chaotropic salt and removing said solution from the nucleic acid and/or glycosaminoglycan--polar/hydrophilic material.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD . . . disaccharide. Within the meaning of the present invention, glycosaminoglycans include heparin, heparan sulfate, hyaluronate, chondroitin sulfate, dermatan sulfate, chitosan sulfate **acharan sulfate** and keratan sulfate and derivatives thereof.

DETD . . . deliver radioactive compounds to a speicific site in the body for radiological treatment of diseases such as various forms of **cancer**.

=>

THIS PAGE IS BLANK